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CENTAURUS II
BY A. E. VAN VOGT

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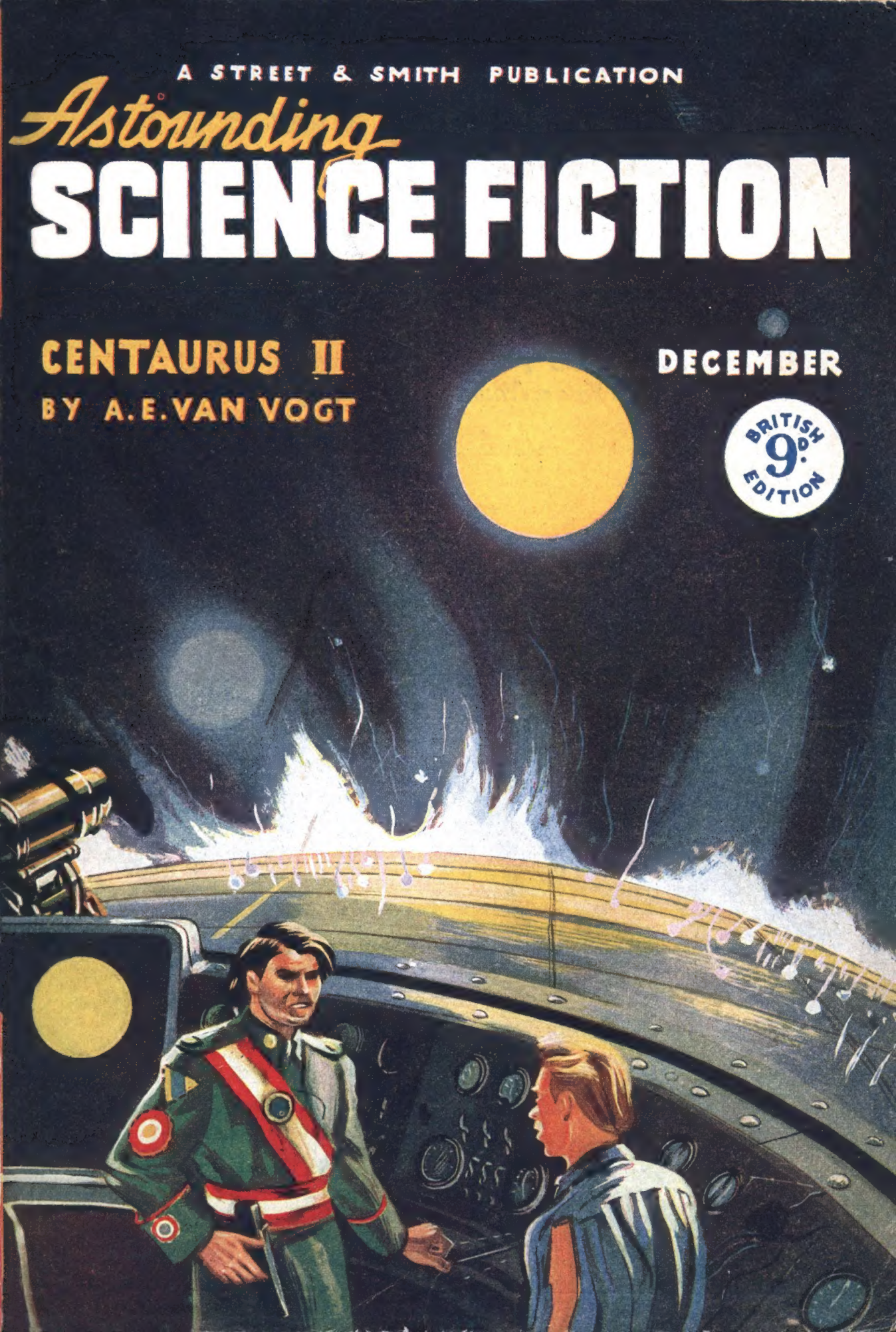

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SCIENCE FICTION

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All stories in this magazine are fiction. No actual persons are designated either by name or character. Any similarity is coincidental.

CENTAURUS II

By A. E. van VOGT

Given perfect ships, perfectly capable of years of exploratory cruising—still men wouldn't find interstellar exploring simple. There are other problems than ships—

OUT of the corner of one eye, Lesbee saw Ganarette climbing the steps that led to the spaceship's bridge. He felt vaguely annoyed. Ganarette, at nineteen, was a big, husky youth with a square jaw. Like Lesbee himself, he had been born on the ship, and he had the peculiar walk of the hundred-odd young people aboard. As a non-officer he was not allowed on the bridge, and it was that, entirely aside from his own personal dislike of Ganarette, that annoyed Lesbee about the intrusion.

Besides, he was scheduled to go off duty in five minutes.

Ganarette mounted the final step, and climbed gingerly down to the cushiony floor. He must have been intent on his task, for when he looked up, he gasped and then stood teetering a dozen feet from Lesbee, staring into the darkness. His reaction startled Lesbee. It hadn't struck him before, but there were actually people on this ship whose only view of space had been by way of the visiscreen.

The sheer stark reality of the transparent plexiglass bridge, with its effect of standing right up in dark, empty space itself, must be mind-staggering. Lesbee had a vague feeling of superiority. He had been allowed on the bridge since early childhood.

It seemed as natural and right as the ship, as ordinary as life itself.

He shrugged. He looked at Ganarette. He saw that the other was recovering.

"So," said Ganarette, "This is what it's really like. Which is Centaurus?"

Stiffly, Lesbee pointed out the very bright star along the sight lines of the engine-aiming devices. Stiffly, because the unusualness of this visit of Ganarete's was beginning to penetrate. He wondered, since such visits were absolutely forbidden, if he should report to his father, Captain Lesbee?

He shook his head ever so slightly. It would be unwise to antagonize the young people on the ship. As the captain's son, he was already being treated as a person set apart. He could see himself repeating his father's lonely existence.

In a few minutes, his period of duty over for another day, he would lead Ganarette gently, but firmly, down the steps, and give him as friendly a warming as possible. He saw that the youth was looking at him, grinning. But all Ganarette said was:

"And which is Earth?"

The pale star held his interest for nearly a minute. He slumped a little, then whispered:

"It's so far away, so very far away. If we started back now, I'd be forty years old when we got back, and you'd be forty-two."

He whirled, and grasped Lesbee's shoulders with fingers that bit in with a metallike strength.

"Think of it!' 'he said. "Forty-two years old. Half of our life gone, but still a chance to have a little fun—if we turn back this instant."

Lesbee freed himself from the clamping fingers. He was startled. It was more than a year since he had heard that kind of talk from any of the younger folk. Ever since his father initiated the lectures on the importance of this, the second voyage to Alpha Centaurus, the wilder spirits among the youths had quietened down.

Ganarette seemed to realize that he was being foolish. He stepped back with a sheepish grin, then sardonically:

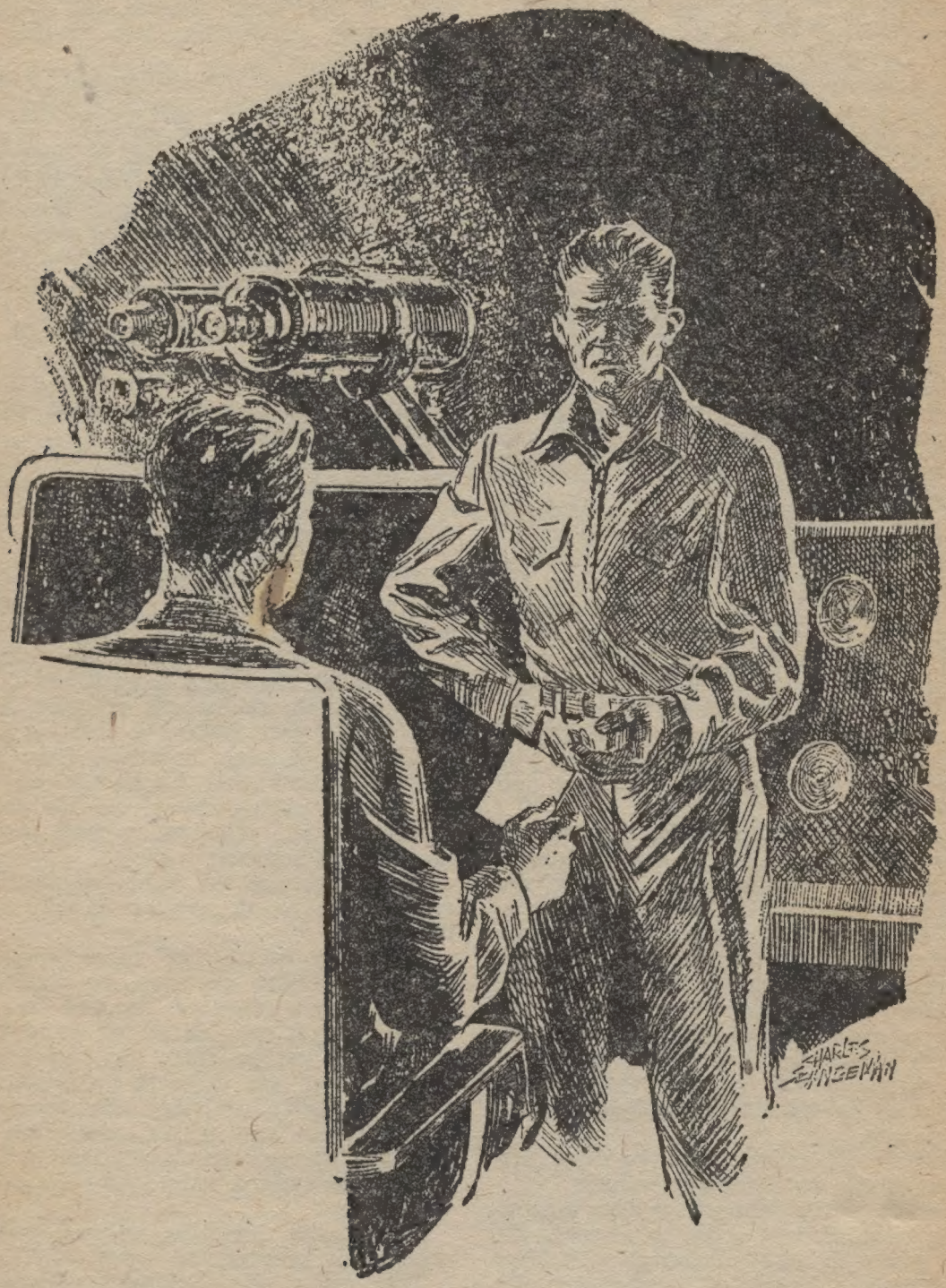
"But, of course, I'm forgetting. It would be silly to turn back now when we're only nine years from Centaurus, a mere eighten years farther from Earth. After all, these days a man of sixty is practically a young man."

Lesbee wasn't sure that he liked the irony. But he was not prepared to get into an argument. He had had such thoughts himself and deep in his being were vestiges of horror at the idea that he was doomed to spend two-thirds of his life on the trip from Earth to Centaurus and back.

With trembling fingers, he looked at his watch. He turned, and switched on the automatics. His duty period was over. Now, for twelve hours, electronic

machinery would take over. Then Carson would assume the watch for six hours. The first officer would be followed after twelve hours by the second officer, who in turn would be followed by Browne, the third officer. And then, when another twelve hours of automatics had gone by, it would be his own turn again.

Such was the pattern of his life, and so it had been since his fourteenth birthday. Now, he would just have time to wash up, before the movie show started.



He grew aware that Ganarette was looking at the clock on the low-built control board.

He faced Lesbee decisively. "O.K., Jim," he said, "you might as well get it now. Five minutes after the motion pic-

ture starts showing, my group is taking over the ship. It is our intention to make you captain, but only on the condition that you agree to turn back to Earth. We won't hurt any of the old fogies—if they behave. If you try to warn anybody, we shall reconsider our plan to make you captain.

"That's all. Let's go down now to the theater. But remember what I said. Watch yourself. Be as surprised as the others, but be prepared to step in and take command."

Lesbee sank heavily into his seat. All around him in the darkness of the theater people were fumbling to their places. He had time for his first real thought: If he was going to do anything, he had better act swiftly.

Gararette crushed into the seat beside him. He leaned towards Lesbee. "Only a few minutes now, as soon as everybody is in. Then the lights go on."

A buzzer sounded. "Ah," whispered Ganarette, "the picture is going to start."

The sense of inexorable time pressing him to decision was strong in Lesbee. He stirred in his seat, and wondered desperately if he couldn't escape in the darkness. He gave that up, for his eyes were accustoming to the night of the theater, and it was not really dark at all. Over to one side he could see Third Officer Browne and his wife sitting together. The older man caught his distracted gaze and nodded.

Lesbee grimaced a smile, then turned away. A moment later, he saw First Officer Carson sitting near the back of the theater. Lesbee senior hadn't arrived yet, and the second officer must be one of the slumped figures nearer the front, but the theater had its usual packed look. Three times a "week" there was a show. Three times a week the five hundred people on the ship gathered from every corner of the spaceship and gazed silently at the scenes of far-off Earth that glided over the screen.

Seldom did anyone miss the show. His father would be along any minute.

Lesbee settled himself to the inevitability of what was about to happen. On the screen a light flickered, and then there was a burble of music. A voice said something about "an interesting trial," and then there were some printed words and a list of technical experts. At that point Lesbee's mind and gaze had wandered back to his father's reserved seat.

It was still empty.

The shock of that was not just an ordinary sensation. It was a blow that punched along his nervous system, astonishment mingled with an empty sense of imminent disaster, the sudden tremendous conviction that his father knew of the plot.

He felt his first disappointment. It was an anguish of bitter emotion, the realization that the trip would go on.

His feelings caught him by surprise. He hadn't realized the depth and intensity of his own frustration aboard this ship seven thousand eight hundred days out from Earth. He whirled to word-lash Ganarette for having made such a mess of the plot.

Just in time he stopped that rush of fury.

If the rebellion was destined to fail, it wouldn't do to have made a single favorable remark about it.

He settled back in his seat with a sigh. The anger passed. He could feel the disappointment fading, and rising up in its place an acceptance of the future.

On the screen, somebody was standing before a jury and saying, ". . . The crime of this man is treason. The laws of Earth do not pause inside the stratosphere or at the Moon or at Mars—"

Once again, the words couldn't hold Lesbee. His gaze flashed to Captain Lesbee's seat. A sigh breathed from his lips as he saw that his father was in the act of sitting down. So he didn't suspect at all. His late arrival was a meaningless accident.

Within seconds the lights would flash on, and the young men would take over the ship.

Curiously, now that there was no chance of doing anything, he was able to give his attention for the first time to the screen. It was as if his mind was anxious to escape from the slow sense of guilt that was building up inside his body. He looked outside rather than in.

The screen was still a courtroom. A very pale young man was standing before a black be-capped judge. And the judge was saying:

"Have you anything to say before sentence is pronounced upon you?"

The reply was haltingly delivered: "Nothing, sir . . . except we were so far out . . . it didn't seem as if we had any connection with Earth—After seven years it just didn't seem possible that the laws of Earth had any meaning—"

It struck Lesbee that the theater was deathly quiet, and that the rebellion was

many minutes overdue. It was then as he listened to the final words of the judge that he realized there would be no rebellion. The judge in that remote Earth court was saying:

"I have no alternative but to sentence you to death in the atomic converter."

After the whole show was over, Lesbee made his way to the projection room.

"Hello, Mr. Jonathan," he said to the slim fortyish man who was busy putting away his cans.

Jonathan nodded politely. His face showed a distinct wonder that the captain's son should have sought him out. His expression was a reminder to Lesbee that it didn't pay to neglect *any* one aboard a ship, not even people you considered stupid and unimportant. Lesbee swallowed, then:

"Odd picture you showed there at the beginning," he said casually.

"Yeah." The cans were being shoved into their protective cases. "Kind of surprised me when your dad phoned up and asked me to show it. Very old, you know. From the early days of interplanetary travel."

Lesbee said something, he couldn't remember what. His mind was humming. He went out without looking where he was going. Weeks were to pass before he admitted to himself how impressed he was.

His admiration for his father actually began on that day.

For weeks they had been slowing down. And, day by day, the bright stars in the blackness ahead grew larger and more dazzling. The four suns of Alpha Centauri no longer looked like one brilliant diamond, but were distinct units separated by noticeable gaps of black space.

They passed Proxima Centauri at a distance of two billion eight hundred million miles. The faint red star loomed vast in the interstellar radar telescopes, then slowly retreated behind them.

Not Proxima the red, the small, but Alpha A was their first destination. From far Earth itself the shadow telescopes had picked out seven planets revolving around A. Surely, of seven planets, one would be habitable.

When they were still four billion miles from the main system, Lesbee's six-year-old son came to him in the hydroponic radiation gardens.

"Grandfather wants to see you, Dad, in the captain's cabin."

Lesbee nodded, and noted that the boy ignored the workers in the garden. He felt vaguely pleased. It was well for people to realize their station in life. And, ever since the boy's birth, several years after the crisis created by Gánarette, he had consciously striven to instill the proper awarenesses into the youngster.

The boy would grow up with that attitude of superiority so necessary to a commander.

Lesbee forgot that. He tugged the youngster along to the playground adjoining the residential section, then took an elevator to the officers' deck. His father, four physicists from the engineering department, Mr. Carson, Mr. Henwick and Mr. Browne were in conference as he entered. Lesbee sank quietly into a chair at the outer edge of he group, but he knew better than to ask questions.

It didn't take long to realize what was going on. The sparks. For days the ship had been moving along through what seemed to be a violent electrical storm. The sparks spattered the outer hull from stem to stern. On the transparent bridge it had become necessary to wear dark glasses; the incessant firefly-like flares of light upset the muscular balance of the eyes, and caused strain and headache.

The manifestation was getting worse, not better.

"In my opinion," said the chief physicist, Mr. Plauck, "we have run into a gas cloud—as you know space is not really a vacuum, but is filled, particularly in and near star systems with free atoms and electrons. In such a complicated structure as is created by the Alpha A, B, C and Proxima suns, gravity pull would draw enormous totals of gas atoms from the outer atmospheres of all the stars, and these would permeate all the surrounding space.

"As for the electrical aspects apparently a disturbance, a flow, has been set up in these gas clouds, possibly even caused by our own passage, though that is unlikely. Interstellar electrical storms are not new."

He paused. He glanced at one of his assistants, questioningly. The man, a mousy individual named Kesser said:

"It happens that I am in disagreement with the electrical storm theory, though I, too, agree on the presence of masses of gas. After all, that is old stuff in astronomy. But now—my explanation for the 'sparks':

"As long ago as the middle twentieth century it was theorized that the gas molecules and atoms floating in space readily interchanged velocity for heat, or heat for

velocity. The temperatures assumed for these free particles were about twenty thousand degrees Fahrenheit."

He looked around, momentarily very unmouselike. "What would happen if a molecule holding such a temperature struck our cold ship? Sparks, of course."

He paused. He was a graying man with a hesitant way of speaking. He finished:

"And then, of course, we must always remember the first Centuari expedition, and be careful."

There was a chilled silence. It was strange, but Lesbee had the impression that, though everybody had been thinking of the first expedition, nobody had wanted it mentioned.

Lesbee glanced at his father. Captain Lesbee was frowning, staring at the floor. The commander had grown more spare with the years, but his six feet three inches of height still supported two hundred pounds of flesh. He looked up, and said:

"It is taken for granted that we shall be cautious. One of the purposes of this voyage is to discover the fate of the first expedition." His gaze flashed towards the group of physicists. "As you know," he said, "that expedition arrived at Alpha Centauri nearly seventy-five years ago. We are assuming that, no matter how violent its ending, even if it fell through the atmosphere of a planet completely out of control, that some trace of its presence will remain. The question is, what would survive after three quarters of a century?"

Lesbee was dimly amazed at the various answers. There were so many things that the physicists expected to survive. The "pile" engines. All electronic detectors and broadcasters mounted in metallic print. "Printed instruments can withstand gravities of 800 G's." The shell of the ship? Its survival would depend on the velocity of the ship as it fell through the planet's atmosphere. It was theoretically possible that the speed would be vast beyond all safety limits. At such immense speeds, the entire machine would go up in a puff of heat energy.

But that was not what the experts anticipated. There should be something. "We should be able to trace the ship within hours of arriving at the planet where it had crashed."

As the men got up to leave, Lesbee caught his father's signal for him to remain behind. When the others had gone, the older man said:

"It is necessary to make plans against a second rebellion. There is a scheme afoot to evade our connection with Earth law by establishing a permanent colony on Centaurus, and never returning to Earth. And this time the rebels do NOT intend to make you captain. Let us, therefore, discuss tactics and strategy—"

Watch duty became a nightmare. The three chief officers and Lesbee divided it into three-hour shifts that ran consecutively now. They wore semispacesuits for protection when they were on the bridge, but Lesbee's eyes at least never stopped aching.

During his sleep period, he dreamed of sparks dancing with unsteady beat under his eyelids, and there was a picture of a successful mutiny led by Ganarette, somehow surprising them in spite of their preknowledge.

It was miraculous enough that his father knew as much as he did about the plot.

The speed of the ship came down to interplanetary levels. And, slowly, they drew near the planet they had selected for a first landing. It was the only possible selection. Of the seven planets in the system, six had already been measured as being of Jupiter size; this seveneth one had a diameter of ten thousand miles. At 120,000,000 miles from Alpha A, a sun fifteen per cent hotter than Sol, it almost approximated Earth conditions. There was the added complication of the pale but sun-sized star, Alpha B, visible in the blackness little more than a million miles to one side; and the almost invisible C, too, would have its effect. But that scarcely mattered beside the wonderful fact that here was a planet of approximately the right size, and even at a distance it glowed with a jewellike atmosphere.

At four thousand miles from the surface of the planet, the giant *Centaurus II* was maneuvered into a fast orbit—and the preliminary study of the planet began.

Nobody had any fun. What should have been the thrill, literally, of a lifetime was a fearful fight against mounting tension. Lesbee accompanied his father to the instrument room for one visit only. In spaceships the principle of alarms that affected both ear and eye was long established practice. The vast room hummed with pulsing energies. Men moved around with faces strained by the incessant grating sound.

Kesser, looking like a shriveled edition of a human being, came dragging over.

". . . The sooner we get into the safety of the atmosphere, the better I'll like it."

Lesbee had the same feeling, but his father only shook his head.

"You were just out of college, Mr. Kesser, when you signed up for the voyage. You have not that awareness of the standards of precaution by which the navy acts."

He added grumpily, "That is the trouble aboard this ship. Those who were born during the trip will never during their lifetime begin to understand what efficiency is."

He finished: "I do not plan to leave this orbit for at least two weeks, possibly even longer."

As the days passed, the information began to come in. The planet's atmosphere had a strong greenish tinge, and this was identified as chlorine. There was a great deal of oxygen in the stratosphere, and the comparison which everybody made was that here was another, but more bounteous Venus, where masks would have to be worn against the irritating chlorine.

No final test of the percentage of either gas present could be made at this height. Only at sea level or thereabouts would a proper measurement tell the final story.

At four thousand miles, the difference between water and land was sufficiently distinguishable for a photographic map to be made. Cameras, taking thousands of pictures a second, obtained views entirely free of sparks.

There were four main continents, and islands uncountable. Fifty-nine hundred cities were large enough to show clearly despite the distance. They were not lighted at night, but that could have been because there was no light in the Earth sense. When Alpha A was not shining down on the continents below, either Alpha B or Alpha C or both were always shedding some equivalent of daylight.

"We mustn't assume," said Captain Lesbee, in one of his daily talks on the broadcasters, "that the civilization here has not discovered electricity. Individual lights in houses would not necessarily be visible if they weren't used often."

These talks, Lesbee discovered, did not serve the function that his father intended. There was a great deal of criticism, a feeling that the commander was being too cautious.

Said one man, "Why don't we run down, collect some samples of the atmosphere, and get this uncertainty over. If we can't breathe that stuff down there, let's find it out, and get started home."

In spite of his confidence in his parent, Lesbee found himself sharing the sentiment. Surely, the people below would not take violent offense. And, besides, if they departed immediately—

Privately, his father informed him that the mutiny had been called off pending developments. The rebel plan, to settle forever, was shaken by the possibility that the planet might not be suitable for human beings, and that in any event permission to settle would now have to be secured from the present inhabitants.

"And, though they won't admit it," said the commander, "they're afraid."

Lesbee was afraid, too. The idea of an alien civilization made his mind uneasy. He went around with an empty feeling in his stomach, and wondered if he looked as big a coward as he felt. There was only one satisfaction. He was not alone. Everywhere were pale, anxious faces and voices that quavered. At least he had his father's strong, confident voice.

He began to build up pictures of a nonmechanical civilization that would be dazzled and dominated by the tremendous and wonderful ship from Earth. He had visions of himself walking among the awed creatures like a god come down from the sky.

That vision ended forever on the ninth day after the orbit was established, when a general warning was sounded from every broadcaster on the ship:

"This is Captain Lesbee. Observers have just reported sighting a superspaceship entering the atmosphere below us. The direction the ship was traveling indicates that it must have passed within a few miles of us, and that therefore we were seen.

"All officers and men will accordingly take up action stations.

"I will keep you informed."

Lesbee put on his suit, and climbed up to the bridge. The sparks were dancing like mad on the outside of the plexiglass, and it was a pleasure to sit down at the bridge directive board, and watch the screen that had been rigged up two days before by the physics department. The screen was fed pictures by the high speed cameras, but an electronic device eliminated every picture which had on it a spark. The speed of the pictures made the scene appear continuous and uninterrupted.

It was Lesbee's first awareness that

there was such a thing as a different way of arranging the equipment aboard the *Centaurus II*. He had read about invention, and adaptation of devises to new purposes, but that was of Earth.

Oddly, the discovery that it could be done aboard ship, too, brought an afterglow of irritation. Why hadn't the method been thought of at the very beginning of the sparks?

His criticism ended. There was a flash of brightness ten miles away at the lower end of the screen.

A ship.

Its speed of approach must have been miles a second, for a quick trailer punch on a side screen failed to show the slightest sign of it in the heavens. One instant it wasn't within two hundred miles, the next instant, in spite of watchful cameras, it had hove-to in the near distance.

Captain Lesbee's voice came quietly from the broadcaster:

"Apparently, these beings have discovered a drive principle that enables them to dispense with gradual starts and stops. They must be able to attain interstellar maximum velocities within minutes of leaving their atmosphere."

Lesbee scarcely heard. He was watching the alien ship. He did remember thinking that it took the *Centaurus II* weeks and weeks to accelerate and decelerate, but that thought quickly blanked out; the comparison was too unfavorable. Once again, there was only the ship ahead.

With a start he saw that it was larger.

Closer.

Sharply, the commander's voice came:

"Torpedo crews load! But take warning: Any officer firing without orders will be executed. These people may be friendly."

Silence reigned on the bridge while the two ships approached within two miles of each other. Then a mile, then half a mile. Lesbee licked dry lips, then glanced at First Officer Carson, sitting in the chair beside him, glaring into the screen. The older man's bearded face showed little or no emotion.

Captain Lesbee's voice came on the broadcaster behind them:

"I want all weapon officers to listen carefully. The following order applies only to torpedo chamber A, under the command of Technical Gunnery Mate Doud. Doud, I want you to drop an air-filled torpedo. Understand me? Drop it. Don't fire it.

"Drop it, let it ease out several hundred yards, so they can't miss seeing it, then keep it under radio control cruising around in a narrow area of about two hundred feet."

The commander explained quietly to his audience: "This action will apprise the other ship that we have weapons, but are not using them in aggressive action. Their response will indicate whether or not their quiet approach was a friendly or a cunning one. It might also give us some information which we desire, but I won't develop on that at the moment.

"Do not be alarmed. All our screens and defenses are up. They represent Earth's mightiest science."

That was briefly reassuring, but the empty feeling came back, as a hard, tense voice sounded on the broadcasters:

"This is Gunnery Mate Doud. Somebody's trying to take the radio control of the torpedo away from me."

"Let them have it." That was Captain Lesbee, quick as a flash. "They've obviously discovered it is harmless."

Lesbee watched as the Earth torpedo was drawn toward the hull of the larger ship. A hole yawned in its side, and the torpedo floated inside.

A minute passed; two; and then the torpedo emerged, and slowly approached the *Centaurus II*.

Lesbee waited, but he didn't actually need words now. For the first time, in all this long voyage, something of the tremendousness of this meeting of the civilizations of different suns struck him. For the first time in all those years the trip took on meaning, and the wonder of himself being on the scene.

Of the multibillions of Earth-born men, he was here on the frontier of man's universe participating in the greatest event in the history of the human race.

Suddenly, it seemed to him, he understood the pride of his father in this voyage.

Suddenly, he realized how great an honor it had been for the man who received the command of the *Centaurus II*. An entire generation of adventurous minded men must have envied the lucky few who thirty years before had launched themselves into the blackness of interstellar space.

For a moment, sitting there, his fear gone, Lesbee shared that pride, and felt a joy beyond any emotions he had ever had.

The feeling ended, as Captain Lesbee's voice came curtly:

"I am limiting this call to officers and science department. I want, first, Doud to try to take control again of the torpedo. See if they'll let it go. Immediately."

There was a pause; then: "Got it, sir."

"Good." Captain Lesbee's voice was triumphant. "I want the atomic men to test it with everything they've got. Actually, *they* didn't have time to put in a death charge of anything, but we've got to make sure, before we pull it back in to the ship—not afterwards."

Silence again, then Plauck's voice:

"Seems to be nothing, captain." He must have realized that was too weak. "There is nothing dangerous inside," he said flatly.

The captain was intent. "Doud, bring it inside. Do not open it. I want the air inside drained off and analyzed by the chemical bureau. At once. All personnel will remain at battle stations."

For an hour, then, the broadcasters were silent. When they finally came to life again, Captain Lesbee said grimly:

"I want Jim and Mr. Browne to come to my cabin, armed."

When Lesbee arrived, followed a moment later by Browne, the commander did not hesitate.

"Gentlemen," he said quietly, "I wish you to accompany me to effect the arrest of Ganarette on a charge of mutiny."

The words seemed absolutely unconnected with what had just happened, but Lesbee went along without a demur.

He did wonder if his parent had gone insane.

The trial of Ganarette began shortly after the breakfast hour on the following sidereal day. The *Centaurus II* was still in her orbit around Alpha A-4, but the alien machine had disappeared. And so the people of the ship could devote themselves to the trial itself.

The extent of the evidence startled Lesbee. Hour after hour records of conversations were reeled off, conversations in which Ganarette's voice came out sharp and clear, but whoever answered was blurred and unrecognizable.

"I have followed this policy," Captain Lesbee explained to the silent spectators, "because Ganarette is the leader. No one but myself will ever know the identity of the other men, and it is my intention to forget, and act as if they did not participate."

The records were damning. How they had been recorded Lesbee could only guess, but they had caught Ganarette when he believed himself to be absolutely safe. The man had talked wildly on occasion about killing anybody who opposed them, and a dozen times he advocated the murder of the captain and the two chief officers and Lesbee's son.

"They have to be put out of the way, or they'll make trouble. The sheep on this ship just take it for granted the Lesbees do the bossing."

Emile Ganarette laughed at that point, then he stared boldly at the spectators.

"It's the truth, isn't it?" he said. "You bunch of idiots take it for granted that somebody can be appointed to boss you for your entire lives. Wake up, fools! You've only got one life. Don't let one man tell you how to live it."

He made no effort to deny the charge. "Sure, it's true. Since when did you become God. I was born on this ship without being asked whether I wanted to live here. I recognize no rights of anybody to tell me what to do."

Several times he expressed the puzzlement that was slowly growing in Lesbee's own mind:

"What is this all about? This trial is silly, now that we've discovered the Centaurus system is inhabited. I'm fully prepared to go back to Earth like a good little boy. It's bad enough to know that the trip was for nothing, and that I'll be sixty years old when we get back. But the point is, I do recognize the necessity now of going back. And, besides, there was no mutiny. You can't try me for shooting off my face, when nothing actually happened."

Towards the end Lesbee watched his father's face. There was an expression there that he did not understand, a grimness that chilled him, a purpose that did not actually consider the evidence, except as a means to a hidden intention.

When dinner was less than an hour away, the commander asked the accused a final question:

"Emile Ganarette, have you entered your complete defense?"

The big-boned young man shrugged. "Yeah, I'm through."

There was silence, then slowly Captain Lesbee began his judgment. He dwelt on the aspects of naval law involved in the charge of "incitement to mutiny." For ten minutes, he read from a document, which Lesbee had never seen before, which his father called the "Articles of Authority on the *Centaurus II*," a special

law passed by the elected Space Board of the Solar System:

". . . It is taken for granted that a spaceship is always an appendage of the civilization from which it derives, and cannot ever be considered as a sovereign power in its own right, its commanders and its purposes subject to the elective whims of the few individuals who happen to be aboard. . . . A spaceship is dispatched by its owners or by a sovereign government. . . . Its officers are appointed. . . . It is governed by rules and regulations set up by the Space Board. . . ."

There was much more, but that was the gist. The laws of a remote, lifetime distant planet applied aboard the spaceship.

And still Lesbee had no idea where his face was pointing his words. Or even why the trial was being held, now that the danger of mutiny was over.

The final words fell upon the audience and the prisoner like a thunderbolt:

"By right of the power vested in me by the peoples of Earth through their lawful government, I am compelled to pass judgment upon this unfortunate young man. The law is fixed. I have no alternative but to sentence him to death in the atomic converter. May God have mercy upon his soul."

Ganarette was on his feet. His face was the color of lead.

"You fool!" he quavered. "What do you think you're doing?" The deadliness of the sentence must have sunk in deeper, for he shouted: "There's something wrong. This guy has got something up his sleeve. He knows something we don't know. He—"

Lesbee had already caught his father's signal. At that point, he and Browne and Carson, and three special M.P.s hustled Ganarette out of the room. He was glad for the chance at movement. It made thinking unnecessary.

Ganarette grew bolder as they moved along the corridors, and some of his color came back.

"You won't get away with this!" he said, loudly. "My friends will rescue me. Where are you taking me, anyway?"

It was a wonder that had already struck Lesbee. Once more, the quick-minded Ganarette realized the truth in a flash of insight.

"You skunks!" he gasped, "you're not going to kill me *now*."

The vague thought came to Lesbee that an outsider would have had difficulty distinguishing the prisoner and his captors by the amount of color in their cheeks. Everyone was as pale as death. When Captain Lesbee arrived a few minutes later his leathery face was almost white, but his voice was calm and cold and purposeful:

"Emile Ganarette, you have one minute to make your peace with your God . . ."

The execution was announced just before the sleep hour, but long enough after dinner to prevent physical upset.

Lesbee did not eat dinner. He spent the evening in his bathroom, bringing up his lunch.

Lesbee awakened the following day from his uneasy sleep to the realization that his "call" alarm was buzzing softly.

He dressed, and headed immediately for the bridge.

As he sank into the seat beside Browne, he noted with surprise that the planet, which had been so close, was nowhere to be seen. A glance at the mighty sun, Alpha A, brought another, more pleasant surprise. It was receding, already much smaller. The three suns A, B and C were still not a unit, but only one, the dim C, was still ahead; the other two swam like small, bright lights in the blackness behind them.

"Ah," said Captain Lesbee's voice from the broadcaster, "there you are, Jim. Good morning."

Lesbee acknowledged the greeting diffidently. He was not too pleased at the attempt at friendliness, and no longer sure that he liked his father. However wildly Ganarette might have talked at times, it was hard to forget that they had grown up together.

Besides, Ganarette had been right! After the threat of mutiny was past was hardly the time to execute.

The finale had come too swiftly, Lesbee thought in agony. Given a chance to consider the sentence, he himself might have protested to his father.

The unseemly haste of the execution repelled him. The cruelty of it shocked him.

His father was speaking again: "While you slept, Jim, I had a specially constructed torpedo dropped into the atmosphere of A-4. I'm sure that everyone here would like to see what happened to it."

He did not wait for a reply. The picture on the screen changed. It showed the *Centaurus II* much closer to the atmosphere of the planet, and off to one side a bright gleam, where the torpedo was

falling toward the haze of atmosphere below.

What happened then was puzzling. The robot machinery began to emit blue sparks. Relays closed and opened erratically. The torpedo began to twist and dive in meaningless jerks. Finally, when every relay was smoking, a spring device started a gas turbine, which provided power for a liquid oxygen rocket system.

The telescopes showed the torpedo as it slowly straightened its course, and, working now on a non-electrical source, turned and climbed back towards the ship. Part of the return journey was through a heavy rain flooding down on the eerie land below.

The torpedo rocketed to the vicinity of the ship, and was snatched by tractor beams and drawn aboard.

As the picture on the screen faded, Captain Lesbee climbed to his feet, and approached a long, canvas-covered object, which Lesbee had noticed when he first entered the bridge.

Very deliberately, the commander tugged the canvas aside.

It took a moment for Lesbee to recognize the scarred and battered cigar-shaped thing that lay there as the once glistening torpedo.

Involuntarily, he approached it, and stared down at it in amazement. There were shocked murmurs from some of the other men. He paid no attention. The inch-thick hull of the torpedo was seared through in a dozen places as by intolerable fire. Behind him, a man said hesitantly:

"You mean, sir, that . . . atmosphere . . . down . . . there—"

"This torpedo," said Captain Lesbee, as if he had not heard the interruption, "and presumably the *Centaurus I*, ran into a hydrochloric acid and nitric acid rain. That's the famous and deadly mixture *aqua regia*, the dissolver of dissolvers. A ship made of platinum or lead, or covered with wax, could go down into an atmosphere capable of that kind of precipitation. And *we* could do it if we had a method of spraying our ship continuously with sodium hydroxide or other equally strong base. But that would only take care of that one aspect of the devil's atmosphere down there.

"You saw what happened to the electrical equipment aboard the torpedo." He glanced around at the expectant faces. "You understand," he said, "that I am co-ordinating information which I have received from several science departments."

He went on: "The natural electricity around this planet interflows on a colossal scale. For anything we've got, that air is an ionized hell. What the special explanation is, I don't know. One of the simplest methods of releasing chlorine from the various chlorides of metal is electrolysis. It is possible the plant life of A-4 uses chlorine to maintain its life, and releases electricity into the ground and air as a sort of excrement, which, in turn, causes the release of chlorine into the atmosphere.

"The planetary vastness of such a phenomenon would make for complication too great for us to figure out at this distance, and besides that is not what we are interested in."

He looked around again, gravely now. "Well, that's all, gentlemen. With that kind of erosion going on, the wreck of the *Centaurus I* would have suffered chemical changes that would make it unrecognizable to our instruments. We can assume that their atomic drives—operated as they are by electrical and electronic equipment—would have ceased to function as they entered the atmosphere, and they crashed here three-quarters of a century ago. They found out the hard way that the Alpha Centuari system is not for man."

The words lifted Lesbee out of his tension. He had taken it for granted they would spend several years in exploration.

Now instead they would be going home.

He would see Earth before he died.

The excitement of that thought ended, as his father spoke again:

"Whatever the form of the aliens, they were not very friendly. They warned us, but that could be because they had no desire for our big ship to come crashing down on one of their towns.

"They made no effort to communicate with us. The warning transmitted, they departed. Since then, we have seen two ships come up and disappear, apparently heading out to interstellar space. Neither of the ships made any effort to approach us."

He broke off, finished curtly: "I have no recourse but to follow the instructions given me by the Space Board before we left Earth. We will examine a few more planets here. Everytime we see a ship we will approach it. If we are shunned, then we shall leave this system in approximately one month.

"We are not, however, going home.

"My orders are, to proceed to Sirius, then Procyon, and not till then return to Earth. Since we shall have only enough fuel to reach the vicinity of Sirius it will be necessary for us at some future date to use as fuel the interior decorations of the ship. This entire piece of information is not at the present time, not till I give permission, to be given to anybody aboard this ship.

"You can now see why it was necessary to execute the trouble-maker in our midst. The example made of him will restrain the hotheads."

The intensity went out of his voice. He sounded suddenly tired, as he finished:

"Gentlemen, you have all necessary information. You will conduct yourselves with that decorum and confidence which is the mark of an officer regardless of the situation in which he finds himself.

"You have my best wishes—"

James Lesbee, the third, acting captain, sat in the great captain's chair, which he had rigged up on the bridge, and pondered the problem of the old people.

There were too many of them. They ate too much. They required constant attention.

It was ridiculous having seventy-nine people around who were over a hundred years old.

On the other hand, some of those old scoundrels knew more about science and interstellar navigation than all the younger people put together. And they were aware of it, too, the cunning, senile wretches.

"Let's see now, which ones could be killed without danger of destroying valuable knowledge?" He began to write down names, mostly of women and nonofficers among the men. When it was finished he stared down at it thoughtfully, and mentally selected the first five victims. Then he pressed a button beside his chair.

After two minutes a heavy built young man climbed up the steps from below.

"Yeah," he said, "what is it?"

Lesbee III gazed at the other with carefully concealed distaste. There was a coarseness about Atkins that offended his sensibilities, and in a curious fashion it seemed to him that he could never like the man who had killed his father, James Lesbee, Jr.—even though he himself had ordered the killing.

Lesbee sighed. Life was a constant adaptation to the reality of the inorganic and organic matter that made up one's environment.

In order to get a man properly murdered, you had to have a capable murderer. From a very early age he had realized that his nonentity of a father would have to be eliminated. Accordingly, he had cultivated Atkins.

The man must be kept in his place, of course.

"Atkins," said Lesbee with a weary wave of one hand, "I have some names here for you. Be careful. Do not make the mistake of making a mistake. The deaths must appear natural, or I will disown you as an inefficient fool."

The big man grunted. He was the grandson of one of the original workers in the hydroponic radiation gardens, and it had caused quite a stir when he had been relieved of his duties as a gardener some seven years before.

The resentment died quickly when the officer's son who protested the loudest was put to work in Atkins' place.

Lesbee had thought out things like that years before he acted against his father. His plan was to kill Atkins as soon as he had served his purpose.

With an aloof air, he gave the first five names, gave them verbally; and then, as Atkins withdrew down the steps, he turned his attention to the screen. He pressed another button, and presently the graying son of the old first officer climbed up to the bridge and came over to him, slowly.

"What is it—captain?"

Lesbee hesitated. He was not sure he liked the slight pause before the use of his title. He was not sure that he liked Carson.

He sighed. Life was a problem of so *many* adjustments, with everybody making a fetish of hoarding what knowledge they had. One had to put up with so much, and that was strange because he could remember in his own youth that people even then had been much more open-handed and open-hearted.

Why, this first generation had taught their children everything they knew—so it was said.

"Uh, Mr. Carson, what are the latest reports on Sirius?"

Carson brightened. "We are now within ten thousand billion miles. The ship has been swung around for deceleration purposes, but it will be a week yet before the telescopes will be able to determine definitely the size of the planets or whether they have atmospheres."

"Any, uh, radiation activity?"

Mr. Carson started to shake his head. He stopped. A curious expression came into his eyes. Lesbee twisted to follow his gaze.

Slowly, he stiffened.

The forward half of the plexiglass bridge was twinkling with a scattering of sparks. Even as Lesbee stared, they grew more numerous.

In an hour the gas storm had closed in around them.

Sirius A at five hundred million miles looked about the size of the Sun as seen from Earth. Lesbee III did not make the comparison from his own experience. There were motion picture views that provided a fairly exact standard for judgment. What was radically different was the planetary arrangement.

There were two planets between Sirius A and its companion sun. Their orbital speed was fantastically swift, the one nearest B having a velocity of nearly two hundred miles a second. The other one, which was four hundred and seventy million miles from A, had a velocity of just over one hundred and twenty-five miles a second.

It was this nearest planet that offered their only hope. With a diameter of seventeen thousand miles, it was less than half the size of the second planet, and about one hundredth the size of the planets that swung weightily beyond the erratic orbit of Sirius B.

Lesbee III studied the reports, depressed but determined. It was clear that the universe had not been designed for the comfort and convenience of man. But he must be careful not to accept the implied defeat.

Reluctantly, he made his way to the cabin where, for long now, he had segregated his aged grandfather.

He found the old man sitting up in a chair, watching a small screen view of the planet that swung nearer and nearer. Possession of the screen was one of the many small courtesies which the younger man extended to the other, but so far it had produced no friendliness.

His grandfather did not look up as he entered. After a little, Lesbee walked over and settled himself in a chair facing the other.

He waited resignedly. It was hard when people misunderstood one's purposes. He had once thought his grandfather would understand, even if no one else did, that James Lesbee III had the interests of the trip at heart.

Perhaps it was too much to expect, though. Human beings were always willing to be objective—about other human beings; and so an old man resented the method by which he had been retired.

Some day, no doubt, he, Lesbee III, would be retired by Lesbee IV, now ten years old. It seemed to the young man in a sudden burst of self-pity, that when the time came he would accept the situation gracefully—provided it didn't happen too soon.

His annoyance passed. He launched his bombshell:

"Grandfather, I have come to ask your permission to announce that you will come out of retirement during the whole period that we are in the vicinity of Sirius, and that during that period you will direct the activities of the ship."

The long, thin, scrawny body moved, but that was all. Lesbee suppressed a smile. It seemed to him that his grandfather's mind must be working furiously. He pressed his purpose, as persuasively as possible:

"Throughout your life, sir, you have had but one purpose: to ensure that the voyage of the *Centaurus II* is completed according to the orders you received from the Space Board. I have read those orders, so I know what your feeling is. And I want to assure you that I understand fully the importance of this mission."

He shrugged. "Frankly, I like it aboard ship. Here, after your death—which I hope will never take place—I shall be commander. People used to be worried about the fact that there was one more girl in the third generation than there were men. I solved that problem very simply. I took a second wife. It was shocking for a while, but now no one gives it a second thought."

He leaned back easily. "A voyage like this is something special. We're a little private world, and we have to make private adjustments to changing conditions."

He paused, and waited. But the old man said nothing. Lesbee smothered his irritation in an affable smile.

"You might be interested, sir, in the suggestions I have to make for our stay within the Sirius system. Naturally, it is already pretty certain that we cannot land here. That atmosphere below is saturated with sulphur. Just what that would do to our ship I don't know. But one thing is certain. We've got to find out right here where we go next."

It seemed to Lesbee that he had his

audience interested now. The old man was stroking his scraggly white beard, his lips pursed thoughtfully.

But again it was Lesbee who broke the gathering silence:

"I have studied the reports of the methods used to re-establish communication with the Centaurians. The methods all seem too timid, considered in retrospect. There was no bold determination on your part to force attention from them, and although you spent months longer than your original intention cruising around, your lack of initiative made that merely a waste of time."

"It was obvious even then that there is a chlorine-breathing interstellar civilization, somewhat superior to that of Earth. Now, here is a sulphur-breathing world."

He leaned forward, in a sudden intensity: "We must make ourselves so obnoxious to these people that they will give us all the information we want. Are you interested?"

The old man stirred. Slowly he straightened his long body. His eyes narrowed to slits of blue.

"Just what have you got in mind," he asked, "besides murder?"

The atomic bomb that was fired into the atmosphere of Sirius I attained a velocity of thirty miles a second. And so, in spite of the violently exploding energy flares that soared up to meet it, it penetrated to within forty miles of the planet's dimly seen surface before it was finally exploded by a direct hit.

In one hour, when the entire scene was still concealed by an impenetrable cloud, they had their first reaction.

A transparent, glittering shell not more than eight feet in diameter was detected by the shadow telescopes. There was something inside it, but whatever it was refused to resolve into focus.

It came nearer and nearer, and still the thing inside would not show clearly to their straining eyes.

Lesbee III stood on the bridge beside the chair in which his grandfather sat. And the sweat broke out on his brow. When the shell was two hundred yards distant, he said:

"Do you think we ought to let it come any nearer?"

The old man's glance was contemptuous. "Our screens are up, aren't they? If it's a bomb, it can't touch us."

Lesbee III was silent. He did not share the old man's confidence that Earth's science was equal to anything that might happen in space. He was prepared to admit that he knew very little about Earth's science, but still—that shell.

"It seems to have stopped, sir." That was Carson, pointedly addressing the aged captain, ignoring the acting captain.

The words relieved Lesbee III, but the first officer's action saddened him. What kind of suicidal impulse made Carson think that the temporary presence of the hundred-year-old retired captain was a good reason for insulting the man who would be commander for thirty years more at least?

He forgot that, for the thing in the shell, whatever it was, was watching them intently. Lesbee III felt a hideous thrill. He said jumpily:

"Somebody get us a clear picture of it."

The screen blurred, then cleared, but the object in the shell looked as confusing as ever. After a moment longer it moved in an unhuman fashion. Instantly the shell began to approach the spaceship again with a disturbingly steady forward movement.

Within seconds, it was less than a hundred yards away, and coming nearer.

"He'll never get through the defenses!" Lesbee said doubtfully.

He watched the shell with a gathering tenseness. Not once did it slow. At twenty-five yards, it was already through the outer defenses not only of the ship but of Lesbee's sanity.

He couldn't see it. That was the damnable, mind-destroying part. His eyes kept twisting, as if his brain would not accept the image. The sensation was fantastic. His courage slipped from him like a rotted rag. He made a dive for the stairway, and was vaguely amazed to find Carson there ahead of him. He felt the burly Browne crowding his heels.

Lesbee III's final memory of the bridge was of the ancient Captain Lesbee sitting stiffly in the great captain's chair—and the alien shell only a few feet from the outer hull.

They found his grandfather an hour later, still alive but quite mad, and stone-blind. As they carried him down the steps to his room, Lesbee heard the old man muttering away to himself. He strained, and a few words came through:

". . . We forgot the eccentric orbit of Canis Major A with its B. We forgot that B is one of the strange suns of the Galaxy . . . so heavy, so monstrously heavy—*it* came originally from a planet of B—"

In the cabin, Lesbee had his first good

look at the lined and bearded face. He was shocked. The eyes were all wrong, twisted, crossed, as if they had tried to look at something that could not be seen by human eyes. As he watched they continued to twist, sightlessly, horribly.

Captain James Lesbee, first commander of the *Centaurus II*, died in the sleep hour that same sidereal day, seventy-seven years, four months and nine days out from Earth, at the honorable age of one hundred and six years.

Within six months, no man or woman of his generation remained alive.

It was then that Lesbee III made a major error. He attempted to carry out his purpose of getting rid of a no longer wanted Atkins.

The death of Lesbee III at the hands of Atkins—who was immediately executed despite his plea of self-defense—created a new crisis aboard the *Centaurus II*.

James Lesbee IV was only ten years old, and, though it was urged by Browne that he be made captain at once, First Officer Carson thought otherwise.

"It is true," he said sanctimoniously, "that he will be grown up by the time we reach Procyon, but in the meantime we will establish a Captain's Council to command for him."

In this he was supported by Second Officer Luthers. And several weeks went by before Browne discovered the two wives of Lesbee III were now living with Carson and Luthers.

"You old goats!" he said, at the next meeting of the Captain's Council, "I demand an immediate election. And if you don't agree right now, I'm going to the scientists and the crew."

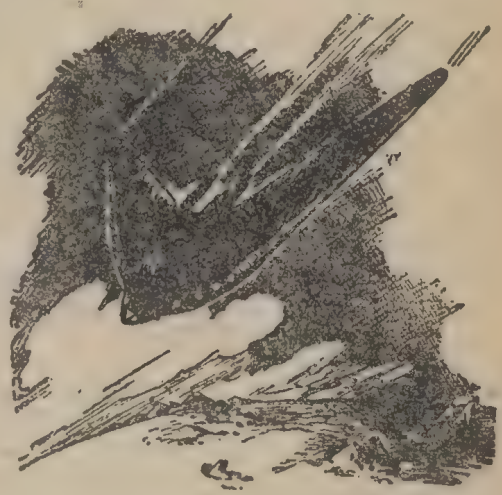
He stood up, and towered over the smaller men. The older men shrank back, and then Carson made the mistake of trying to draw a blaster from an inside pocket. When he was in a hurry Browne did not know his own strength. He grabbed the two men, and bumped their heads together. The power of that bump was too much for human bone and flesh, particularly since Browne's rage did not permit him to stop immediately.

The developing limpness of the two bodies in his grasp finally brought him out of his passion. When full realization penetrated, he called the scientists into session, and it was then decided to hold an election.

It required a while to make the people understand what was wanted, but finally an executive council was duly elected by secret ballot. And this council recognized the right of James Lesbee IV to succeed his father when he reached maturity. In the meantime the council offered the temporary captaincy to Browne, for a term of one year.

By the following year two of the council members had thought over the situation, and offered themselves as candidates for the captaincy. Browne was re-elected.

The former third officer was vaguely annoyed at the opposition that had developed against him.



"Why," he said in a hurt tone to his eldest son, "they don't know anything about the duties of an officer."

He began to train his two sons in the details of the work.

"You might as well know something about it," he said. "Somebody's got to."

For a while his conscience bothered him, and then he began to hear that there was a campaign of vilification being carried on against him behind his back.

"Things never used to be like this," he complained to the council. "When donkeys like young Kesser and that middle-aged goat Plauck can call you a fool behind your back, there's something wrong. I think maybe next year you fellows had better appoint me captain until Lesbee is twenty-five years old, and end that kind of nonsense. We can't take the chance of some nut getting control, now that we're burning the inside of the ship in the fuel chambers."

Councillor Plauck commented dryly that the selection of decorations to be used for fuel was a function which the science department shared with the ship's officers. A knowledge of physics was a handy adjunct to any commander in a

space cluttered with dangerous energies such as the cosmic rays.

Browne's "recommendation," as it was called, was refused. But he was re-appointed to the captaincy for another year.

It was shortly after this that one of the councillors, passing through the hydroponic gardens, saw a familiar face among the workers. He reported to the council, and an emergency meeting was called. Browne was suave.

"Why shouldn't young Lesbee limber up his muscles a little? This idea of a separate heirarchy is all wrong. In my opinion, all the young people should work in the gardens for a time every year. I'm going to have that put to a vote. I'll bet the regular garden workers would just love to have you big shots come around and tell them that there are people aboard this ship who are too good to do manual labor."

Later, when he was asked about the progress of young Lesbee in his officer training, Browne shook his head, troubled.

"Frankly, gentlemen, it ain't so wonderful. I have him come up to the bridge every day after he's through at the gardens. And he just doesn't seem to take any interest. I'm coming to the conclusion, reluctantly, that he just isn't very bright. He just can't learn good."

It was clear to some of the council members at least, that Captain Browne was learning very "good" indeed.

James Lesbee IV did not pause in his picking of the ripened fruit. The nearest horizon of the hydroponic gardens was two hundred yards away, but his caution was boundless. He listened with deliberate casualness as the girl spoke to him:

"Mother says the sparks started two days ago. So we must be near Procyon."

Lesbee IV. said nothing. He accepted the old explanation for the spark phenomena, that they occurred wherever there were two or more suns to draw huge masses of gases from one another's atmospheres. He had given the girl her instructions the "night" before. It was now up to her to make her report. His fingers continued their automatic movements, as she went on:

"The others think you should run in this election. Browne is putting his oldest son up for the council. If we can elect you in his place—"

She stopped; then: "Remember, you're now twenty-nine years old. And the council still has paid no attention to your rights. You'll have to fight for them."

Lesbee IV made no answer. He felt a weariness at these stupid people who were always urging him to come out into the open. Didn't they realize the danger? And, besides, it was important to wait till they had been to Procyon. Then, with Earth as the next destination, the scoundrels who had cheated him out of his rights would begin to think twice.

"If you don't act," said the girl anxiously, "the men are going to take things into their own hands. They're tired—we're all tired—of doing all the hard work, and getting the poorest food. Gourdy says"—she paused—"we'll take the ship."

She sounded awed. And for the first time Lesbee made a movement that had nothing to do with fruit picking. "Aaaaaa!" he said, and brought his hand down, contemptuously. These ignorant fools, he thought. They didn't realize what they were talking about.

Take the ship indeed—a bunch of working people, who had never even seen space, except on a screen.

"You'd better hurry!" said the girl. "You'd better hurry and make up your mind—"

The vague reports of that underground resurrection that was developing failed to disturb Captain Browne.

"Those dirty beggars," he said to Lieutenant George Browne, his younger son, and chief officer of the ship, "haven't enough brains to lick my boots."

He shrugged. "Besides, just wait till they find out what my plans are when we get into the Procyon system. That'll make them think twice."

The younger Browne said nothing. He considered his old man a fool, and it had already struck him that it would be a long, long time before this burly captain-father of his would start to decline physically.

At seventy-nine, the commander looked good for another twenty years.

It was a long time to wait for the captaincy. He'd be an old man himself before it happened.

The subject was one which he had already discussed with his elder brother, who was due to run for the council at the elections next month.

Perhaps, he should also let the underground group become aware of the tenor of his thoughts. A few vague promises—

Procyon A, with six times the luminosity of Sol, swim in the darkness ahead. A yellow-white sun, it loomed larger and larger, brighter and brighter. In the blackness billions of miles to one side, Procyon B was a pale husk of a sun, clearly visible only in the telescopes.

Surprisingly, Procyon sported more planets than had the brilliant, the massively bright Sirius. Twenty-five huge worlds revealed themselves to the radaric eyes of the telescopes. The ship investigated the two with diameters of twenty-five thousand miles.

"Those other fellows had good ideas," said Captain Browne, "but they never gave these alien civilizations credit for good will. The thing we've got to remember is, not once have the inhabitants of these systems made any attempt to harm us. You may say, what about old Captain Lesbee? Nonsense, I say. He looked at something that wasn't for human eyes, aid it wrecked his brain, and he died. The important thing is, that thing in the shell that looked in at him had the ship completely at its mercy, and it made no effort to do damage.

"O.K.!" Big, old Browne looked around the council room. "Where does that leave us? In the best position we've ever been in. Old man Lesbee didn't dare to force issues at Centaurus, because he was dealing with the unknown. At Sirius we got scared and beat it, because the unknown showed itself to be absolutely and completely unhuman. But now we know. There are several big interstellar civilizations here, and they can tell us what we want to know. What do we want to know? Why, which stars have Earth-sized planets with oxygen atmospheres.

"They don't care if we find 'em. Why should they? Oxygen planets are forever beyond their reach, just as sulphur and chlorine planets are beyond ours.

"O.K., then, let's tell 'em what we want to know. How?" He grinned triumphantly at his audience. "Just leave it to me. The first of their ships we can get near will find out."

Actually, it was the fourth ship that found out. The first three paid the *Centaurus II* no attention. The fourth one came to full stop in the space of a score of miles. It came back to within a hundred yards of the *Centaurus II*, and remained quiet throughout the whole show that Browne put on.

The show was simple enough. He rigged a huge motion picture screen onto one of the lifeboats, then sent the lifeboat outside. The projector was mounted inside the bridge, and the series of pictures that followed showed the *Centaurus II* leaving Earth, arriving first at Alpha Centaurus, then at Sirius, and the discovery that the inhabited planets were based on chlorine and sulphur atmospheres respectively. This was shown by the simple method of projecting beside the planets pictures of the atomic structures of chlorine and sulphur. Earth was pictured with oxygen.

Then began the most important phase of the weird showing. A star map was flashed onto the screen. It pictured sixty-odd suns within twenty light-years of Sol. Onto this scene was imposed a triumvirate of atomic structures—chlorine, oxygen, sulphur. The trio was jerked in front of one sun, held for a moment, then moved on to another.

"Let's see," said Browne, "how quick they catch on that we don't know what kind of atmospheres the planets of those stars have."

They caught on as the camera was moving its three-headed question mark from the sixth to the seventh star. They acted by blotting out the moving trio. Onto the stationary map they imposed a solid rank of atomic structures, one beside each sun.

Browne counted four that were shown as having oxygen atmospheres. They were all on the other side of the sun from Sirius and Procyon. As he watched, another star map was synchronized with the Earth one, on a vaster scale. It showed thousands of suns, and beside each one was the revealing atomic symbol that indicated the nature of the atmospheres of the habitable planets.

It showed something else, a red triangle extending up from one of the stars about forty light-years from Sol and Procyon. The base of the triangle was an arc that joined the two suns. Along this act a spaceshiplike object was shown as moving from Procyon to Sol.

There was a curious by-play in connection with the movement. A small object moved three and a fraction times around Sol while the spaceship made the journey.

Plauck gasped: "They're trying to tell us that we can get to Earth in three and a half years if we get into the orbit of . . . of—"

He sat down heavily. Browne stared at him curiously. He was elated that the mission was accomplished, but he could not quite decide about the swift journey

to Earth. The prospect of being shorn of his power in such a short time depressed him, particularly as the authorities might frown upon his possession of three young wives, and might even ask questions about his methods of remaining in power.

He saw that the alien ship was already a mile away, and its image on the screen moved off more and more swiftly. It was obviously time to go home.

"Get the lifeboat in," Browne said. "I guess we'd better get started."

He did not know until a few minutes later that Gourdy had timed the revolution to catch the officers and scientists on the bridge.

Gourdy was twenty-four when he led the revolt that overthrew the elected power group on the ship. He was a thick-built, small man with very black eyes, and his father had been a member of the fertilizer crew, attached to the garden squads. And his father before him. And *his* father.

To Gourdy the ship was an enormous vaulting shape, the walls and ceilings of which curved past sections of torn floors. He had been told that once the floors had stretched solidly from one wall of the ship to the other, but this seemed fantastic.

During his lifetime he had watched the lines of the floors withdraw to narrower and narrower confines, and he had even helped in the task of transporting the dismantled sections to the drive chambers. But even with that memory he could not build up inside himself a mental picture of what the ship had once been like.

He remembered sleeping in dormitories with ceilings hundreds of feet high, and the beds packed in rows. The suggestion that the original crew and officers had possessed a separate bedroom merely irritated him. It was "old man's talk." Nonsense. And besides it didn't matter anyway.

It was the present that counted.

He entered the captain's cabin with wide, curious black eyes. And, because everything was devastatingly new, he took nothing for granted. What was visible to his wondering gaze merely served as an inducement to explore what was not visible.

Thus, in raising the metal floor, he discovered the detectaphone system, which had not been used since the days of Captain Lesbee I.

It did not require any particular astuteness to realize how valuable it would be in overhearing and keeping a careful ear on the thoughts of his supporters.

That was really the simplest part of his newly assumed position. Slowly, as the days passed, the problem of running the ship loomed larger and larger. The rebels in their passion of hate had murdered every scientist and officer aboard. Just who was going to operate the ship: Lesbee IV?

Gourdy scowled over the difficulties involved in arriving at some method of working with Lesbee IV.

He had Lesbee brought to him in the captain's cabin. (After the day of the killing, he had not dared to go alone up to the bridge.) He sat in his garden dungarees as Lesbee was brought in. He gazed at Lesbee with bleak eyes, his face unsmiling and hostile.

The conversation that followed was carried on in the spirit of "You-will-either-help-us-or-you-will-be-killed." The crew—" of which I am a member"—would know soon enough whether Lesbee was doing things properly. The results would speak for themselves.

He assumed cowardice on the part of Lesbee. All his life. it seemed to Gourdy, he had watched the other man become more cautious, more abject in his outlook on life.

"He tried to put a good face on it," he said to his particular cronies after the inerview, "but he'll work—for the good of the ship. Not that I think he knows very much. That old scoundrel Browne saw to that. But he knows something."

Which was more than could be said for Gourdy, or anybody else aboard the *Centaurus II.*

The great ship ran the length of the Procyon system on is automatic steering gear, then was slowly, uncertainly, pointed in the direction of Sol by a young man who knew "something."

After about three weeks of actually operating the instruments, as distinct from having their operation blurrily explained to him when he was too tired to think, he began to edge the array of accelerators fractionally forward, making a rhythm out of the process, moving each lever of the series before starting again with lever number one.

From the great captain's chair on the bridge, Gourdy watched anxiously. That was at the beginning. As the days passed, and nothing disastrous happened, his confidence returned.

The realization came that the ship was

indestructible. Nothing that men could do mattered to a machine that had been built to survive generations of human beings. He dreamed about the ship in his sleep hour. He had visions of it hurtling through blackness at thousands of miles a second now, and it seemed to him wonderful beyond all his previous emotions.

The first conviction that came to him finally was a commonplace enough revelation: The ship was more important than the human beings in it.

He began to resent the destruction of the interior of the ship for fuel.

He sought and found fuel materials the absence of which would be less noticeable.

His black eyes snapped at people who tossed food scraps on the floor after meals, and at the end of four months he issued his first decree:

"Carelessness and dirty habits will not be tolerated. The ship is the property of those aboard, and individuals who do not do their share of looking after it are insulting the group. Severe penalties will be invoked if this situation does not change immediately."

They were about a year out from Procyon, when Lesbee IV brought a strange fact to the attention of captain, the protector, Gourdy.

In a single twelve-month period the *Centaurus II* had covered more than one-third of the distance to Sol. In one year the ship had gone more than three light-years, which would formerly have required twenty years.

"Of course," said Lesbee IV, "I may be wrong, but just look at the star maps of a year ago and of today."

Gourdy looked. The blur of lights interested him, and he listened with an air of thoughtfulness as the other man explained the shift of the stars, and pointed out how great the shift had been. The distance on the maps looked infinitesimally small to Gourdy, but he only smiled and nodded, when Lesbee had finished; and it was not until several days later that he said:

"But, of course, your little scheme will not succeed."

"Eh?" Lesbee was startled.

"I suppose you thought you could frighten me into handing over the captaincy to you, for fear of what might happen to me once we got back to Earth."

Lesbee flushed, and not only because he was startled by the other's reaction. The thought *had* occurred to him that these fools would be wise to give back the command to the rightful commander, now that Earth was so much nearer.

Until this moment he hadn't actually thought of the fact of their speed being doubted. The potentialities of such disbelief stunned him.

"But I'm not trying to fool you!" he gasped.

Gourdy was chuckling, his eyes bleak. "So you thought I was an idiot, who would fall for a simple story like that." He was almost beside himself with fury. but his voice remained cold. "My friend," he said, "since you were smart enough to, uh, discover this discrepancy, will you explain to me how it happens that we are now traveling at three times the speed of light?"

Lesbee hesitated. At such moments as this, his shame that he, the son, grandson and great-grandson of a captain had sunk so low was almost unbearable. He shrank a little from the look in the black, glaring eyes of Gourdy. He said uneasily:

"I've looked through the books on astronomy, and there is one thing—it is possible we have accelerated ourselves into the planetary orbit of some remote and huge sun; Arcturus is my guess. The fact that there are other suns much nearer doesn't matter. It has been established that, once a body in space attains an orbital relationship with a sun, it requires very powerful forces to upset the relationship."

He shrugged. "We're traveling at the speed that might be expected at the outer rim of a wheel thirty-four light-years in radius."

He broke off: "You can't escape facts —captain. In another year we'll have to start giving serious thought to slowing down the ship. Or else we'll shoot right past the Sun."

Gourdy dreamed of the tremendous machine darting through the Earth system and out into the infinite distances beyond, and again and again woke up perspiring with fear and with a terrible excitement. He began to visit the astronomical room secretly, and operate the shadow telescopes. For hours, he would gaze at the image of the Sun, and it seemed to his imagination that it was growing larger and brighter by the minute.

Except for brief visits to the bridge to spy on Lesbee, and the unobtrusive trips to the telescopes, he seldom left the captain's cabin. He lay on the great blue and silver bed half a day at a time, the

earphones of the detectaphone clamped over his ears, tuning into different parts of the ship. And, always, he hoped there would be no talk against him.

But there was, more and more. The gossip of the women, the plain talk of the men. Even his two cronies, who, for what seemed to Gourdy obvious reasons, he had had forbidden access to the captain's cabin, ranted against him.

The words of Lesbee IV fell on ears that listened eagerly, but fearfully. Was it possible, people asked themselves doubtfully, if Earth was really only two years away?

"We'll have to kill that madman!"

Madman, wondered Gourdy. *Why, they must mean me.* He felt furious. *The fools! Couldn't they see the game that Lesbee was playing—trying to re-establish rule of the ship by divine right.*

What right had he to rule the ship? After four generations, the regulations of the Space Board meant nothing—But they'll hang me! Gourdy thought in agony. *And I was only working for the good of the ship.*

They had no right, Browne and those others, no right to make four generations of Gourdys handle fertilizer.

I'd rather see the ship go on forever than have that kind of injustice triumph.

He would have to kill Lesbee. He saw that with a sudden simple clarity. Lesbee was the nub of the problem. That was obvious. Kill Lesbee, and the opposition would die of itself. It seemed a reasonable hypothesis, he told himself with a smiling thoughtfulness.

The idea of death danger from Gourdy was not new to Lesbee. The quality of caution that was in him created such fears before they existed, and fed on a thousand incidents that were without meaning as well as a thousand incidents that showed the true character of the other.

Unlike the groups in the dormitories, he did not think of Gourdy as insane. There was too much of himself in the man; and, besides, during those first ten years of his childhood he had acquired some of his father's outlook on life. It was not conscious; he was not aware of its origin. And for years and years it was hidden under a frustration of easy alarms. But, gradually, as the first year under Captain Gourdy left him freer than at any previous period in his life, he began to think braver thoughts.

Alone on the bridge, he gazed into infinity; and the vastness of the firmament, and something of his own smallness, grew upon him.

It was impossible for such thoughts to dim his sense of caution.

He rigged up a warning device, whereby a light would blink on when somebody started to climb the stairway that led to the bridge. He always, very carefully, switched it off when he went off duty.

A similar electronic device connected to an alarm buzzer protected him when he slept.

There was never a moment when he did not have a blaster on his person. Gourdy, climbing up to the bridge to murder him, died literally without knowing that his purpose was suspected.

It was about a week after Gourdy's body was consumed by the drive converters that the first woman came to Lesbee, complaining of a swelling in her neck.

Lesbee touched the flesh gingerly, then gazed at the pale face of the woman, a garden worker named Keena. It was something of a shock to realize that he was now guardian of the ship in all its aspects.

"Does it hurt?" he asked.

There was a vague stinging sensation, it seemed. The swelling tingled steadily.

When she had gone, Lesbee pored through medical books on space sickness. It did not take long to discover what related to apparent glandular or other swelling: ". . . It is not actually a swelling in any normal sense. The presence of cosmic rays causes a meson 'pile' swelling in the affected areas. The swelling is a source of atomic energy on a very tiny scale, and there is a continuous sensation of heat— Death usually occurs within twenty-four hours. . . ."

Lesbee read the account, his face as white as a sheet.

". . . The presence of cosmic rays, if discovered aboard a spaceship, is usually due to some leak in the defenses of the ship. This should be rectified *without delay*. Once set in motion, a meson pile chain reaction can consume a spaceship. . . ."

Lesbee stumbled to his feet, staggered into a protective suit, and rushed to the instrument room, snatched up a detector. He had no doubt as to where he must look. For months Gourdy had been tear-

ing down obscure inner walling for the drive converters. He found a dozen areas where the vital insulation had been removed.

He marked them off, then, still vague as to his next move, he headed down to the machine shops. The place had been stripped, all loose materials, including shielding, removed.

Lesbee raced back to the captain's library, and found a book describing the ship itself. It was a fifteen hundred page volume, and it had endless maps and drawings of the structure of the *Centaurus II*. There were five chapters on the shielding, and, finally, what he wanted, a subheading titled "EMERGENCY DISASTER MEASURES."

". . . Set out screens to power level five. (Note: Such a screen is dangerous to the ship in that the screen itself releases gamma and beta rays sufficient to penetrate the outer walls. . . .")

Down in the engine room, Lesbee studied the instrument board controlling the screens. Fortunately, his flimsy knowledge was sufficient. Everything was clearly marked. He shoved the levers over to the figure five, then settled down in a chair to read the next paragraph.

". . . If the temperatures in the affected areas continue to rise after screens or other shielding have been interposed, then it must be assumed that the meson pile has established itself. The affected areas must then be shielded off, and the ship should head for the nearest emergency port. If the ship is far from port, those aboard should set their automatic warning broadcasters to full power, and in the final issue put the ship under automatic control. Suicide is suggested in preference to death as a living meson pile. . . ."

REPORT ON *CENTAURUS II*

. . . the ship was found drifting near the Sun. . . . The last survivor Captain Lesbee IV . . . was found wearing all available protective suits, but the meson pile that was his body had reduced it to a shapeless mass.

Captain Lesbee apparently lived long enough to reverse the engines, and so he succeeded in breaking the ship out of its high-speed orbit. He also left behind him a fairly detailed account of his period as captain.

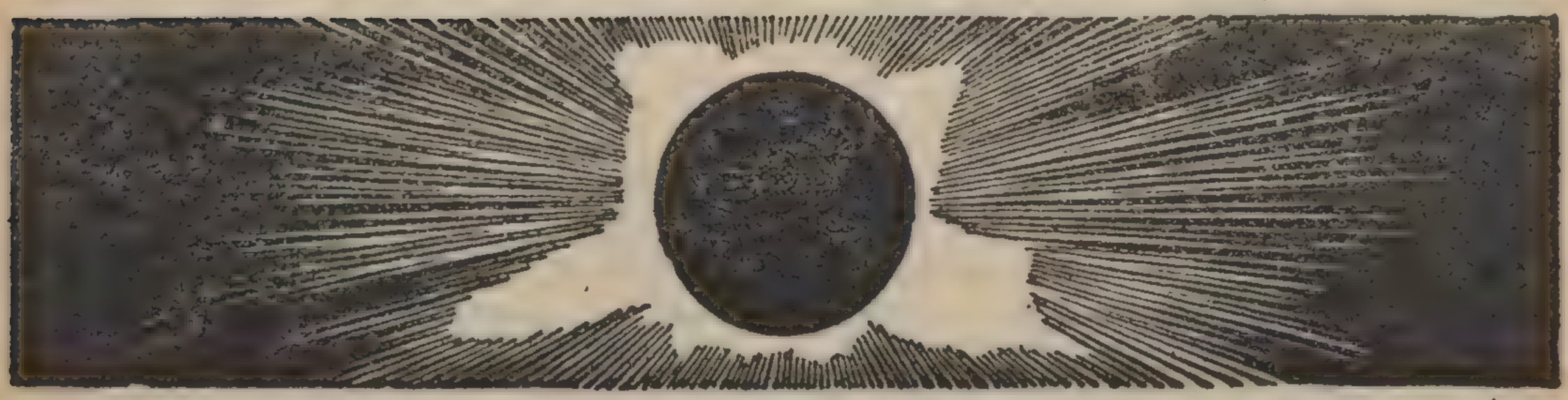
He took it for granted that the mission of the *Centaurus II* was accomplished. He refers to extensive film records . . . unfortunately, the film room and the adjoining records department had been transformed into a meson pile.

No other clue or record of the mission was found aboard.

It can only be conjectured what precautions can be taken on future expeditions, to prevent the conflicts which destroyed the ship. Apparently, every type of "government" failed once the connection with Earth grew too vague. The relentless environment of space prevented the kind of recovery from error that would have occurred in the milder climates of Earth.

As a result of man's inability to rule himself, nearly two hundred years after the invention of the interstellar drive, he still has no knowledge of his nearest neighbors in space.

This knowledge has become vital for the expansion of civilization.



LETTER TO ELLEN

By CHAN DAVIS

The gentleman had a problem. Most men have trouble framing the question to The Girl; he had a harder job —and she would have a still harder decision to make—

DEAR Ellen,

By the time you get this you'll be wondering why I didn't call. It'll be the first time I've missed in—how long?—two months? A long two months it's been, and, for me, a very important two months.

I'm not going to call, and I'm not going to see you. Maybe I'm a coward writing this letter, but you can judge that when you've finished it. Judge that, and other things.

Let's see. I'd better begin at the beginning and tell the whole story right through. Do you remember my friend Roy Wisner? He came to work in the lab the same time I did, in the spring of '16, and he was still around when I first met you. Even if you never met him, you may have seen him; he was the tall blond guy with the stooped shoulders, working in the same branch with me.

Roy and I grew up together. He was my best friend as a kid, back almost as far as I can remember, back at the State Orphanage outside of Stockton. We went to different high schools, but when I got to Iowa U. there was Roy. Just to make the coincidence complete, he'd decided to be a biochemist too, and we took mostly the same courses all the way through. Both worked with Dietz while we were geting our doctorates, and Dietz got us identical jobs with Hartwell at the Pierne Labs here in Denver.

I've told you about that first day at the lab. We'd both heard from Dietz that the Pierne Labs were devoted, now, almost entirely to life-synthesis, and we'd both hoped to get in on that part of the work. What we hadn't realized was quite how far the work had got. I can tell you, the little talk old Hartwell gave us, when he took us around to show us the lay of the land; was just as inspiring as he meant it to be.

He showed us the wing where they're experimenting with the synthesis of new types of Celenterates. We'd heard of that, too, but seeing it was another thing. I remember particularly a rather ghastly green thing that floated in a small tank and ocassionally sucked pieces of sea moss into what was half mouth, half sucker. Hartwell said, offhand, "Doesn't look much like the original, does it? That one was a mistake; something went wrong with the gene synthesis. But it turned out to be viable, so the fellows kept it around. Wouldn't be surprised if it could outsurvive some of its natural cousins, if we were to give it a mate and turn it loose." He looked at the thing benignly. "I sort of like it."

Then we went down to Hartwell's branch, Branch 26, where we were to work. Hartwell slid back the narrow metal door and led the way into one of the labs. We started to follow him, but we hadn't gone more than three steps inside when we just stood still and gawked. I'd seen complicated apparatus before, but that place had anything at the Iowa labs beat by a factor one thousand. All the gear on one whole side of the lab—and it was a good-sized place—was black-coated against the light and other stray radiation in the room. I recognized most of the flasks and fractionating columns as air-tight jobs. A good deal of the hookup was hidden from us, being under Gardner hoods, air-tight, temperature-controlled, radiation-controlled, and everything-else-controlled. What heaters we could see were never burners, always infrared banks.

This was precision work. It had to be, because, as you know, Branch 26 synthesizes chordate genes.

Roy and I went over to take a closer look at some of the gear. We stopped about a meter away; meddling was distinctly not in order. The item we were looking at was what would be called, in a large-scale process, a reaction vat. It was a small, opaque-coated flask, and it was being revolved slowly by a mechanical agitator, to swirl the liquids inside. As we stood there we could barely

feel the gentle and precise flow of heat from the infrared heaters banked around it. We watched it, fascinated.

Hartwell snapped us out of it. "The work here," he said dryly, "is carried out with a good deal of care. You've had some experience with full micro-analysis, Dietz tells me."

"A little," I nodded, with very appropriate modesty.

"Well, this is microsynthesis, and microsynthesis with a vengeance. Remember, our problem here is on an entirely different level even from ordinary protein synthesis." (It staggered her a little to hear him refer to protein synthesis as ordinary!) "There, you're essentially building up a periodic crystal, one in which the atoms are arranged in regularly recurrent patterns. This recursion, this periodicity, makes the structure of the molecule relatively simple; correspondingly, it simplifies the synthesis. In a gene, a virus, or any other of the complex proteinlike molecules, there isn't any such frequent recursion. Instead, the radicles in your molecule chain are a little different each time; the pattern almost repeats, but not quite. You've got what you call an aperiodic crystal.

"When we synthesize such a crystal, we've to get all the little variations from the pattern just right, because it's those variations which give the structure enough complexity to be living."

He had some chromosome charts under his arm, and now he pulled one out to show to us. I don't know if you've ever seen the things; one of them alone fills a little booklet, in very condensed notation. Roy and I thumbed through one, recognizing a good many of the shorthand symbols but not understanding the scheme of the thing at all. When we got through we were pretty thoroughly awed.

Hartwell smiled. "You'll catch on, don't worry. The first few months, while you're studying up, you'll be my lab assistants. You won't be on your own until you've got the process down pretty near pat." And were we glad to hear that!

Roy and I got an apartment on the outside of town; I didn't have my copter then, so we had to be pretty close. It was a good place, though only one wall and the roof could be made transparent. We missed the morning sun that way, but I liked it all right. Downstairs lived Graham, our landlord, an old bachelor who spent most of his time on home photography, both movie wires and old-fashioned chemical prints. He got some candid angle shots of us that were so weird Roy was thinking of breaking his cameras.

At the lab, we caught on fast enough. Roy was always a pretty bright boy, and I manage to keep up. After a reasonable period Hartwell began to ease himself out of our routine, until before we knew it we were running the show ourselves. Naturally, being just out of school, we began as soon as we got the drift of things to suggest changes in the process. The day Hartwell finally approved one of our bright ideas, we knew we were standing on our own feet. That's when the fun really began.

Some people laugh when I say "that kind of drudgery" is fun, but you're a biochemist yourself and I'm pretty sure you feel the same way. The mere thought that we were putting inert colloids in at one end and getting something out at the other end that was in some strange way *living*—that was enough to take the boredom out of the job, if there'd been any.

Because we always felt that it was in our lab and the others like it that nonlife ended and life began. Sure, before us there was the immense job of protein synthesis and colloid preparation. Sure, after we were through there was the last step, the ultramicrosurgery of putting the nuclear wall together around the chromatin and imbedding the result in a cell. (I always half-envied your branch that job.) But in between there was our stage of the thing, which we thought to be the crucial one.

Certainly it was a tough enough stage. The long, careful reactions, with temperatures regulated down to a hundredth of a degree and reaction time to a tenth of a second; and then the final reactions, with everything inclosed in Gardner hoods, where you build up, bit by bit, the living nucleoplasm around the almost-living chromosomes. Hartwell hadn't lied when he said the work was carried out with care! That was quite a plant for two young squirts like us to be playing around with.

Just to put an edge on it, of course, there was always the possibility that you'd do everything right and still misfire. Anywhere along the line, Heisenberg's Uncertainty Principle could shove a radicle out of place in those protein chains, no matter how careful you were. Then you'd get a weird thing: a gene mutating before it was even completed.

Or, Heisenberg's Principle might pull

you through even if your process had gone wrong!

We got curious after a while, Roy especially. Hartwell had told us a lot; one thing he hadn't told us was exactly *what we were making,* fish, flesh, or fowl, and were weren't geneticists enough to know ourselves. It would have been better, while we were working, to have had a mental picture of the frog, or lizard, or chicken that was to be our end product; instead, our mental picture was a composite of the three, and a rather disconcerting composite it made. I preferred to imagine a rabbit, or better yet an Irish terrier puppy.

Hartwell not only hadn't offered to tell us, he didn't tell us when we asked him. "One of the lower chordates," he said; "the species name doesn't matter." That phras "lower chordates" didn't ring quite true. There were enough chromosomes in our whatever-they-were's that they had to be something fairly far up the scale.

Roy immediately decided he was going to get the answer if he had to go through twenty books on genetics to do it. Looking back, I'm surprised I didn't have the same ambition. Maybe I was too interested in chess; I was on one of my periodic chess binges at the time. Anyhow, Roy got the genetics books and Roy did the digging.

It didn't take him any time at all. I remember that night well. He had brought home a stack of books from the library and was studying them at the desk in the corner. I was in the armchair with my portable chessboard, analyzing a game I'd lost in the last tournament. As the hours went by, I noticed Roy getting more and more restless; I expected him to come up with the answer any time, but apparently he was rechecking to make sure. About the time I'd found how I should have played to beat Fedruk, Roy got up, a little unsteadily.

"Dirk," he began, then stopped.

"You got it?"

"Dirk, I wonder if you realize just how few chordate species there are which have forty-eight chromosomes."

"Well, humans have, and I guess we're not so unique."

He didn't say anything.

"Hey, do you mean what I think you mean?" I jumped to my feet.

If he did, it was terrific news for me; I think I'd had the idea in the back of my mind all the time and never dared check it for fear I'd be proved wrong. Roy wasn't so happy about it. He said, "Yes, that's exactly what I mean. The species name Hartwell wouldn't tell us was *Homo sapiens.* We're making—robots."

That took a little time to digest. When I'd got it assimilated, I came back, "What do you mean, robots? If we made a puppy that wagged its tail O.K., you'd be just as pleased as I would." (I was still stuck on that Irish terrier idea of mine.) "That wouldn't give you the shudders. Why do you get so worried just because it's men we're making?"

"It's not right," he said.

"What?" Roy never having been religious or anything, that sounded strange.

"Well, I take that back, I guess, but—" His voice trailed away; then, more normally, "I don't know, Dirk. I just can't see it. Making humans—what would you call them if not robots?"

"I'd call them men, doggone it, if they turn out right. Of course if they don't turn out right—maybe I could see your point. If they don't turn out right. Killing a freak chicken and killing an experimental baby that didn't quite—succeed—would be two different things. Yeah."

"I hadn't thought of that."

"Then what the heck *were* you thinking of?"

"Aw, I don't know." He went back to the desk, slammed his books shut.

"What's bothering you, Roy?"

He didn't answer, just went into his bedroom and shut the door. He didn't come out again that night.

The next morning he was grim-faced, but you could see he was excited underneath. I knew he was planning something. Finally I wormed it out of him: he was going to take a look around Branch 39 to try and find some human embryos, as confirmation. Branch 39, as you know, is one of the ones that shut up at night; they don't have to have technicians around twenty-four hours a day as 26 does. Roy's plan was to go up there just before closing time, hide, and get himself locked in overnight.

I asked him why the secrecy, why didn't he just ask to be shown around. "Hartwell doesn't want us to know," he said, "or he would have told us. I'll have to do it on the QT."

That made some sense, but—"Heck, Hartwell couldn't have expected to keep us permanently in the dark about what we were making, when all the dope you needed to figure it out was right there in

the library. He must have wanted simply to let us do the figuring ourselves."

"Huh-uh. He knew we could puzzle it through if we wanted, but he wasn't going to help us. You think the lab wants to publicize what they're doing? No, Hartwell must be trying to keep as many people as possible from knowing; he hoped we'd stay incurious. I'm not going to tell him we've guessed, and don't you."

I agreed reluctantly, but Roy's play-acting seemed to me like just that. Roy was deadly serious about it.

Later, I got the story of that night. He'd gone up to 39 as planned, and hid in the big hall on the second floor; that was the place with the most embroys, and he thought he'd have the best chance there. Everything went O.K.; the assistant turned out the lights and locked up, and Roy stayed curled in his cabinet under a lab table. When the sounds had died down in the corridors outside, he came out and looked around.

He didn't know quite how to start. There were all sizes and shapes of gestators around. When he had taken out his flash and got a good look at one, he remained in as much of a quandary as before. It didn't seem to be anything but a bottle-shaped black container, about twenty centimeters on a side, in the middle of a mass of tubing, gauges, and levers. He could guess the bottle contained the embryo; he could guess the tubing kept up the flow of "body fluids" to and from the bottle; he could recognize some of the gauge markings and some of the auxiliary apparatus; and that was all. Not only was the embryo not exposed to view, but he didn't see any way of exposing it. There was a label, in a code he couldn't read. Nothing was any help.

The gestators were simple enough compared to the stuff he worked with, but he had a healthy respect for that sort of thing and didn't want to experiment to try to figure them out. If you meddled with a gestator in the wrong way, there was the chance that you'd be ruining a hundred people's work; and there would be many more wrong ways than right.

He made the circuit of the lab, stooping over one gestator after another, considering. After a while the moon rose and gave him a little more light. That was not what he needed.

A key turned in the lock.

Roy, hoping he hadn't been seen, ran back to his hiding place. He left the cabinet open far enough so he could see. A figure came in the door, turned to close it, and strode toward the center of the hall. As it passed through a patch of moonlight from one of the windows, Roy recognized the face: Hartwell.

He must have been working late in his office and come down for a look at his branch's products before leaving. Be that as it may, his presence cinched the thing: whatever embryos he looked at would be from our branch. Roy watched breathlessly while the other went from bench to bench, peering at the code labels. Finally he stopped before one, worked a lever, and peeked in through a viewer in the side, which Roy hadn't noticed. He looked quite a while, then turned and left.

I don't need to tell you that Roy didn't lose any time after Hartwell left in taking a look through that same viewer. And I don't need to tell you what he saw.

Reading back over this letter, I can see I'm stretching the story out, telling you things you already know, and things that aren't really necessary. I know why I'm doing it, too—I'm reluctant to get to the end. But what I've got to tell you, I've got tell you; I'll make the rest as short as I can.

Roy was pretty broken up about the whole thing, and he didn't get over it. I think it was the experience in the gestation lab that did it. If he'd just asked Hartwell for the truth, straight out, the thing would have stopped being fantastic and again become merely his business; but that melodrama up in Branch 39 kept him from looking at things with a clear eye. He went around in a half-daze a good deal of the time, pondering, I suppose, some such philosophical problem as, When is a man not a man? It was all terrible, robots were going to take over the world, or something like that. And he insisted I still not tell Hartwell what he'd learned.

Then came the payoff. It was several weeks later, the day after Roy's twenty-sixth birthday. (The date was significant, as I learned later.) He told me before we left the lab that Hartwell had asked him to come up after work to talk with Koslicki.

I raised my eyebrows. "Koslicki, huh? The top man."

"Yes, Koslicki and Hartwell both."

He looked a litle worried, so I ventured a crack. "Guess they've got a really rugged punishment for you, for trespassing that night. Death by drowning in ammonium sulphide, perhaps."

"I don't know why you can't take things seriously."

"Oh? What do you think they want to talk to you about?"

"No, I mean this whole business of—"

"Of making 'robots,' yeah. Roy, I do take it seriously, darn seriously. I think it's the biggest scientific project in the world right now. You take the kind of work we're doing, together with the production of new life forms like those experimental Coelenterates we saw, and you've got the groundwork for a new kind of eugenics that'll put our present systems in the shade. Now, we select from naturally-occurring haploid germ cells to produce our new forms. In the future we'll *make* the new forms.

"We can make new strains of wheat, new species of sheep and cattle—new races of men! We won't have to wait for evolution any more. We won't have to content ourselves with giving evolution an occasional shove, either, we'll be striking out on our own. There's no limit to the possibilities. New, man-made men, stronger than we are, with minds twice as fast and accurate as ours—I take that plenty seriously."

"But they wouldn't be men."

This was beginning to get irritating. "They wouldn't be *Homo sapiens*, no," I answered. "Let's face it, Roy. If I were to get married, say, and have a kid that was a sharp mutation, a really radical mutation, and if he were to turn out to be a superman—that kid wouldn't be *Homo sapiens*, either. He wouldn't have the same germ plasm his parents had. Would he be human or wouldn't he?"

"He'd be human."

"Well? Where's the difference?"

"He wouldn't have come out of somebody's reagent bottles, that's the difference. He'd be—natural."

I could take only so much of that. Leaving Roy to go to his conference with Koslicki and Hartwell, I came home.

There, I finished up the figuring on some notes I'd taken that day in the lab, then I turned the ceiling transparent and sat down with my visor. I'd just added a couple of new wires to my movie collection, so I ran them over—a couple of ballets, they were. No, none of the wires I've shown you. I've thrown out all the movies I saw *that* night.

I was sitting there having a good time with the "Pillar of Fire" when Roy came back. He made a little noise fumbling with the door. Then he slid it back and stood on the threshold without entering.

Switching off the visor, I glanced around. "What's the take, Jake?" I corned cheerfully. "Did Koslicki give you a good dressing-down? Or did he make you the new director?"

". . . I'll play you a game of chess, Dirk."

This time I took a good look at him. His shoulders were stooped more than usual, and he looked around the room as if he didn't recognize it. Not good. "For crying out loud! What's the story?"

"Let's play chess."

"O.K.," I said. He came in and got out the men and the big board, but his hand shook so I had to set up his men for him. Then, "Go ahead," I told him.

"Oh, yeah, I've got white."

Pawn to king four, knight to king bishop three, pawn to king five—one of our standard openings. I pulled my knight back in the corner and brought out the other one; he pushed his pawns up in the center; I began getting ready to castle.

Then he put his queen on queen four. "You don't mean that," I said. "My knight takes you there."

"Oh, yeah, so he does," Roy said, pulling his queen back—to the wrong square. He was staring over my shoulder as if there was a ghost standing behind me. I looked; there wasn't. I replaced his queen.

Finally, still keeping up the stare, he began, "Dirk, you know Hartwell told me—"

"Yeah?" I said casually. I knew it had been something important. Roy hadn't been *this* bad the last few weeks. Whatever it was, he might as well get it off his chest.

Roy, however, seemed to have forgotten he'd spoken. His eyes returned intently to the board. His bishop went to king three—where I could not take it—and the game went on.

"You're going to lose that bishop's pawn, old man," I remarked after a while.

I think that was what triggered it. He said, suddenly but evenly, "I'm one."

"I'm two," I said, apropos of nothing. My mind was still on the game.

"Dirk, *I'm one*," he insisted. He stood up, upsetting the board, and began to walk up and down. "Koslicki just told me. I'm one of the . . . Dirk, I wasn't born, I'm one of the robots, they put me together out of those chemicals in those white-labeled reagent bottles in that laboratory—"

"What?"

He stopped his pacing and began to laugh. "I'm just a Frankenstein, you can pull out your gun and sizzle me dead, it won't be murder, I'm just a robot." He was laughing all through this and he kept on laughing when he'd stopped.

I figured if he was going to blow up he might as well blow up good and proper. He'd make some noise, but old Graham would be the only one disturbed. "So," I said, "how did you feel going through the reaction vats over in 26? Did the microsurgery hurt when they put you together?" Roy laughed. He laughed harder. Then he screamed.

Deciding that enough was enough, I yelled at him. He screamed again.

"Shut up, Roy!" I shouted, as sharply as I could. "You're as human as I am. You've lived with yourself twenty-six years, you ought to know whether you're human or not."

After the first couple of words he listened to me O.K., so I figured the hysterics were over. I tried to sound firm as I said, "Are you through with the foolishness, now?"

Roy didn't pass out, he simply lay down on the floor. I sat down beside him and began to talk in a low voice. "You're just as good as anybody else; you've already proved that. It doesn't matter where you started, just what you are here and now. So what if you did start out in a lab? The rest of us started out in the ooze on the bottom of some ocean. Which is better? It doesn't make any difference. You're just as good as anybody else." I said it over and over again, as calmly as I could. Don't know whether or not it was the right thing to do, but I had to do something.

Once he raised his head to say, "Roy Wisner, huh? Is that me? Heck no, why didn't they call me Roy W23H? . . . I wonder where they got the name Wisner anyway." He sank back and I took up my spiel again, doing my best to keep my voice level.

After several minutes of this he got up off the floor. "Thanks," he said in a fairly normal tone. "Thanks, Dirk. You're a real friend." He went toward the door, adding as he left, "You're human."

I just sat there. It wasn't till he'd been gone a couple of minutes that I put two and two together. Then I raced out of that room and to the stairs in nothing flat.

Too late. Graham's door was open downstairs, and the light from inside shone into the hall, across the twitching body of Roy Wisner.

Graham looked at me, terrified. "I thought it was all right," he stammered. "He asked me for some hydrocyanic. I knew he was a chemist, I thought it was all right."

Hydrocyanic acid kills fast. One look at the size of the container Roy had drained and I saw there wasn't much we could do. We did it, all right, but it wasn't enough. He died while we were still forcing emetic down his throat.

That's about all, Ellen. You know now why I never spoke much to you about Roy Wisner. And you've probably guessed why I'm writing this.

Roy was one of the experiments that failed. He was no more unstable mentally than a great many normally born men; still, a failure, though nobody knew it until he was twenty-six years old. The human organism is a very complex thing, and hard to duplicate. When you try to duplicate it, you're very likely to fail, sometimes in obvious ways and sometimes in ways that don't become apparent till long afterward.

I may turn out to be a failure, too.

You see, I'm twenty-six now and Koslicki and Hartwell have told me. *I* wasn't born, either. I was made. I am, if you like, a robot.

I had to tell you that, didn't I, Ellen, before I asked you to marry me.

DIRK.

THE MODEL SHOP

By RAYMOND F. JONES

Any research outfit has to have an efficient model shop. But the model shop this outfit had suddenly became just a wee bit more than that—

BRIAN KENNELY was at once the awe, the idol, and the unadulterated pain in the neck to the junior, assistant, and Project Engineers of Special Developments Lab at North State Electric.

The awe because his brain held more than the combined abilities of most any two of the other Project Engineers plus any three juniors. The idol because he'd take time from his own fantastic Goldbergs to help the lowliest junior with his first resistance coupled amplifier when it howled like a banshee.

And the pain in the neck because whenever a Brian Kennely set of prints went to the model shop all other projects sat on the shelf until the B. K. stuff was done.

This even included the work of Chris Devon, North State's ace engineer, whose specialty was slugging it out with intractable components and circuits that no one else would tackle, until the impossible was accomplished with them.

In his pain-in-the-neck moments Brian Kennely was whisperingly referred to as the cavalier engineer. When he first came to North State, Millie, the lab secretary, had taken in his pipe, smart Stetson, and natty clothes.

"Just like Don Ameche," she'd said. "I'll bet he invents the telephone before next week, the big cavalier—"

But it was only because he had done and was doing the things that most men dream about but never accomplish. They liked him and respected him for it.

Chris Devon had known him since high school. At college they had met Martha, who had chosen Chris over Brian. Chris had never quite understood why, but he was not one to question miracles.

After college, Chris Devon had gone directly into development engineering, but that had been too tame for Brian Kennely who'd gone to Mongolia and South America for several years of geophysical engineering. He had designed instruments that were revolutionizing the science.

Then, shortly before the war, he switched to communication electronics. At Devon's suggestion he'd joined North State, but had spent most of his time as a field engineer. He had been as good as in the front lines during most of the war.

It was inevitable that their opposite natures combined with life-long acquaintance should result in strong mutual attraction. As a consequence, they had determined to take the step dreamed of by most top-flight engineers but seldom achieved. They planned to open their own consulting office as soon as their kitty grew big enough—and it was growing. They'd soon be ready.

But there was still work to be done for North State. And Devon was two weeks behind on a fairly routine project, a remote weather station. His prints had been in the model shop for three weeks now.

And Kennely's—

He squinted up from his propagation calculations as he saw the familiar pipe laid on the top of the desk next to his.

"Hi, Chris," Kennely's voice boomed. He took off his coat. "Trying to put a forecasting unit in that weather station of yours?"

"How can I put anything in it—when it's still a bunch of paper down in MacIlhenney's files?"

"Aw, don't be hard on Mac. He's got his hands full these days, so many boomers passing through his shop pretending they're mechanics."

"Sure, I'd find excuses for him, too, if my stuff were all finished after only five days."

"You mean he's got my job done? Say, that's nice going! Come on down and let's have a look at it."

"I saw it as I passed the model shop on the way in."

Kennely took Devon's arm and hoisted him out of the chair. "Look, Chris, I'll tell you a secret. Here's how I get Mac on the line. Slip him a couple of these six-bit cigars—"

Devon laughed and gave up. You

couldn't do anything else with a guy like Brian Kennely.

They walked down the hall to the model shop as Mac opened up.

"I hear you've got my baby all done," said Kennely.

"You only brought it in Monday," said Mac. "I told you Wednesday."

"Always kidding, eh?" said Kennely to Devon.

"What's that over in the middle of the floor?" asked Devon. "Isn't that—? Mac! You finished *my* model, too!"

The foreman stared across the shop at the two completed models. "Well, I'll be—! The boys must have put on a little extra speed yesterday. I had to leave early in the afternoon, but I didn't expect anything like that!"

They entered the shop and walked around the models.

"I never saw anything quite so pretty come out of this dump," said Kennely. "Who've you got on the wiring, Mac?"

"Same girls you always called solder slingers."

"Promote them to senior solder slingers. Come on, Chris, let's get Dick and Charlie to dolly these things into the lab."

The two engineers went back to their lab benches and began setting up test equipment.

Chris Devon's project was a simple station to be used by the Weather Bureau to collect climatological data in places where no co-operative observers could be obtained.

Brian Kennely's project, as always, was the more spectacular. It was a television remote indicating system for use over long distances or in cases of harmful effects to human observers at close range. It was particularly adaptable to radioactive chemistry.

When the two models were wheeled in, Kennely put the plugs for his transmitter and receiver units into the nearest receptacles and waited for the warm up. In a moment the dial needles began to swing over, and the engineer quickly adjusted the controls. The power supply seemed in order. The amplifiers were functioning properly. He switched in the sample instrument indicators, then the video pickup.

In a moment the receiver screen lighted in a blaze of color. He brought the meters into focus. They shone with the sharpness of a modern four-color print.

"What the devil?" Devon exclaimed. "I didn't know you were doing this in color. That's better stuff than the networks have yet."

"Oh, yes." Kennely's manner was his best cavalier style. "Remote chemistry, for example, would be almost impossible without color. This is not bad—for a first model."

The other engineers gathered around now, gaping at the excellence of the color television. Devon returned to his own prosaic setup. He'd have to get busy and push some of these weather stations out the door before he got cut off at the pockets. Webber, the chief engineer, wasn't happy with the lack of progress on the project, which was budgeted at one hundred thousand dollars with no wartime cost-plus, either.

Devon glanced over the beautifully arranged array of dials and indicators on the viewing panel. He checked the mounting of the scanner tube.

Something was wrong. Then he saw it—so obvious that he'd had to look three times in the same spot before it registered. There was an extra row of instruments on the viewing panel. He stared at them and swore to himself. Why couldn't they follow a blueprint down in the model shop?

What he saw was incomprehensible. On the unscheduled row of meters was the designation: Prognostication.

Groups of dials with variable time scales indicated pressure, temperature, and relative humidity, and precipitation rates.

Brian Kennely came up quietly. "Nice job on yours, too," he said. "Tried it out yet?"

"Some yokel down there is trying to be funny! Look—"

"So you *did* put in a forecast unit! I didn't know."

"Of course not! There isn't any such animal. Somebody's painted a panel and put some dials on it. I can take a joke, but they've loused up the whole layout and Webber wants this stuff by the end of the week."

"*Mine* works," said Kennely, calmly drawing on his pipe.

"What do you mean?"

"Mine has unauthorized additions, too—but keep it under your hat. I don't want these other guys to know about it."

"What are you talking about?"

"The color business for one thing. You know as well as I do that no conventional color circuits could be put into a setup like mine."

Devon stared at his fellow engineer. "You didn't design it?"

"No—but it works. Somebody may be

playing jokes, but that somebody can make our best stuff around here look like peanuts. Turn on your gadget. Let's see how it works."

As if doubting Kennely's sanity, Devon plugged in the cords and watched the tubes and meters come to life. He inspected them critically. His Climat Center receiver showed a perfect image of the dials, but it was not colored.

"I guess they figured you didn't need color," said Kennely. "How can we tell if the prognosticator panel is any good?"

"This is ridiculous, Brian! It couldn't possibly work. This thing would indicate exact temperatures, pressures, and so on. A meteorologist would be laughed out of the business if he claimed he could do that."

"But suppose we set the thing to indicate the data for tomorrow at this time and see how well it checks?"

"Great guns, this things would be worth millions of bucks if it would do what those meters say!"

"Yeah," said Kennely thoughtfully. "But I'm thinking about the guy in the model shop who is responsible for this. He'd be a good guy to offer a full partnership when we open up on our own. Let's go down to the shop. Got those figures on tomorrow's weather?"

Walking towards the model shop again, Chris Devon had the curious feeling that he had stepped off a high precipice during the morning and hadn't quit dropping.

Mac came over as they entered. "Don't tell me," he said. "I know. It isn't any good. We'll have to get out another rush model by Saturday noon. We can't do it, and that's that!"

"We just wanted to compliment you on a fine job," said Kennely.

Mac scratched his head in disbelief. "What do you want, then?"

"Nothing. We want to compliment the ones who worked on our models. Who did it?"

"Parks would know. He's supervisor on them. Parks!"

The supervisor turned. When he saw Kennely he put a hand over his face.

"I'm sorry as heck, Brian, but we just haven't been able to get started on your model. We can't begin work until tomorrow at the earliest. All the parts are on hand, but—"

Mac turned upon him. "Are you crazy? Kennely and Devon both got their models this morning."

"That's impossible! We haven't made them!"

"*Somebody* did," said Kennely. "They're in our lab."

"I don't believe it," said Parks. "Somebody's—"

"Nuts," Mac said.

"Maybe he didn't see it," suggested Devon. "Maybe some of the crew just went ahead—"

"On a project like those two? It would be about as inconspicuous as four elephants doing a ballet in here."

"Well, how about you, Mac? You know which ones would handle it."

"Well, sure—Lessee, now. Myrtle would do the video circuits. No, wait a minute. She was on Peterson's project. Jane—"

The foreman suddenly looked hard at them. "Come to think of it I don't seem to be able to remember a single one that wasn't on something else. But *somebody* built those models—"

"Mind if we just wander around and talk to your people?" said Devon.

By noon they had spoken with every member of the shop crew. Every one denied any part of the work on the two models.

Even Kennely's calm began to waver. "Whoever the genius is around here, he's certainly of a retiring nature. Let's go back and dismantle mine. We ought to leave yours as is until we find out just how well the prognosticator circuits are working."

"Suits me," said Devon. "But those circuits *can't* work!"

Carefully, they dismantled the model of the remote indicator. As they proceeded, they were filled with admiration for the ingenuity of the circuits disclosed. They were so completely unorthodox that it was as if a mind totally unfamiliar with conventional engineering had designed them. They were *foreign.*

By quitting time they had the color video circuits analyzed and they had encountered a completely new method of achieving color television, one they knew was worth untold amounts commercially.

"There it is," said Kennely as they finished. "Shall we continue our search for the unknown gremlin in our midst or shall we tell Webber we did it and see if the Board of Directors vote us a raise?"

"Why would anybody cook up a thing like this and not come forward to get the medals pinned to his chest?"

"Honestly, I don't know, Chris. This is the biggest, most senseless, and most potent puzzle I've ever seen. But let's

cal it quits for tonight. We'll see how the meterological forecast for tomorrow makes out."

Devon took the sketches of the circuits home. After dinner that night he spread them out in his study while Kip and Pat, the twin nine-year-olds, hollered from downstairs for him to come and play.

It was like standing stupidly by while someone pointed out the obvious, he thought. He would never in the world have conceived those circuit applications, but once he had seen them in use he knew that they were the simplest means of accomplishing their purposes.

There was one factor that neither he nor Kennedy had considered sufficiently. Both the models had required several hundred man hours of work in their construction. Why couldn't they find one person who had contributed? Many must have had a part in it.

Where did Mac fit in? Devon wondered. Surely he must know more than he was admitting.

The next morning Kennely was already at his desk when Devon entered.

He removed his pipe and looked up. "Shall we check the weather?"

"You check it," said Devon. "I think I'm getting scared of the answer."

"It's not quite time, but maybe it's close enough to interpolate the values. Let's have a look."

They went in and turned Devon's equipment on. The values were markedly different from the ones predicted the day before.

"We'd better wait," said Kennedy. "Notice that the temperature readings appear to be of the air *outside* the building instead of inside."

"There's no sensitive element connected outside."

"Let's check on it with some thermometers."

At that moment, Jackson, a Project Engineer, walked by swearing profusely. "You'd think those dumb solder slingers of Mac's had never seen a blueprint before!" He addressed the air that was sulphurous about his head.

"It's happened again!" said Kennely.

For half a hour they watched the instruments in the weather station. Slowly, the needles approached the values indicated twenty-four hours before on the prognostication panel.

At the exact time Kennely checked his watch.

"Bull's eye," he announced. The three predicted values of pressure, temperature and relative humidity were right on the nose. It was too much for sheer coincidence.

"Well—any suggestions?" said Kennely, at last.

"Let's go down and look over the model shop again. Maybe we can pick up a clue. There's got to be *some* answer to this crazy thing."

They had barely stepped into the door of the model shop when Mac saw them. He picked up a bar of cold rolled steel from a bench.

"This place is off bounds for engineers!"

"What's the trouble, Mac?" asked Kennely.

"Trouble! That fool Jackson was in this morning. He swore up and down that we don't know a blueprint from the linoleum on the floor. He said we hadn't made his model according to the prints, same as you."

"Well, look, Mac—those models are a lot better than we designed them. We can't figure out who could build them that good. Why do you think no one will admit working on them?"

"You've got me. As if I didn't have enough trouble trying to build Goldbergs, now I have to put up with screwballs who build stuff and say they never saw it before."

"Well—mind if we walk around some more?"

"You can't make much more trouble than I've already got, I guess."

The two engineers moved into the shop. On their left was Mac's pride, the powerful, new, six thousand dollar brake. A small turret lathe was located farther along, and beside it, a heavy drill press. Other, smaller machine tools were lined up along the wall farther to the left. On the right was the assembly division where rows of girls wired the jobs.

Straight ahead was a materials receiving room. A huge packing crate which formed a cube nearly ten feet on a side dwarfed everything else on the floor of the room.

"Wonder what that gadget is," said Kennely. "Another monster like this brake that gets used about once a week?"

"Mac ought to clean the place up," said Devon. "It looks like bug tracks all over."

"Where? What are you talking about?"

Devon picked up a soldering iron that was plugged in, but lying unused in its holder. "This." His finger pointed to a delicate, silver line that traced its way along the entire length of the cord.

"I never saw any bug tracks like that before," said Kennely. "Look, here's more of the stuff." Kennely pointed to an almost invisible line of it on a small electric wrench.

Devon traced it along the cord into the conduit. They moved back to the section occupied by the machine tools. On each, they found thin silver lines running to the various elements. When they looked closely, the entire floor seemed criss-crossed with the threads. They went out to the materials storeroom and found the stuff swarming over the floor and upon the sides of the huge packing case that housed the unknown machine monster.

Mac came up as they looked over the maze of threads.

"Find anything?"

Devon shook his head. "You ought to spray the place with DDT. It looks like bugs are swarming all over you, leaving these trails."

Mac took a chisel and scraped at some of the stuff. "That's only a minor difficulty. We've been swearing at it for a week now. It won't come off anything, and no one can find out where it comes from. Why don't you make a project out of it? It would be about as useful as some of the dingbats you design."

"What's in the big box?" said Devon.

"Heaven only knows. I haven't had time to look. It came in with an order of materials several days ago. An engineer's gadget for his project, I guess, but nobody's claimed it yet. If they don't pretty soon, I'm going to ship it back where it came from."

The engineers left without coming to any conclusion. As three o'clock approached, they watched the sky expectantly. At twenty minutes before three it began to sprinkle and exactly on the hour the maximum precipitation was falling.

Kennely pulled his chair over by Devon's desk. "How many millions do you think it will be worth to good old North State?"

"Have you talked to Jackson about his gadget?"

"No. He saw that it wasn't as he'd had it drawn so he just sent it back for changes. So I don't know what it did—*special*, I mean."

"I'm getting worried about this business. It can't be supernatural."

"Let's come back tonight and take a private tour through the model shop."

"You think somebody might be working here at night? Why?"

"We haven't found anything in the daytime. It's a thought."

Devon was ready to try anything. He called Martha and told her he'd be working late. At five o'clock he and Kennedy went out for a snack. When they returned, the assembly lines were dark and the labs were empty with the exception of two or three engineers working on their own time—apple polishers, Kennely called them.

The model shop was dark and deserted. The watchman opened it, and, as the door swung open, they saw dimly in the darkness the giant brake slowly closing on a sheet of chassis metal. The clank of its reciprocating gears echoed ghostily in the darkened shop.

The watchman flashed a beam of light. "Who's in there?"

He switched on the lights. The brake was motionless.

"I'd have sworn that thing was working," said the watchman.

Kennely shrugged. "Nobody's here. It couldn't have been working."

The watchman left hesitantly with a final backward glance at the inert, giant brake.

"Brian, that thing *was* going!" Devon said when they were alone.

"I know. But I wouldn't want that watchman spreading word that the model shop is haunted.

"Haunted! Good grief!"

They moved slowly about the shop. On all the machine tools were partly worked pieces of stock, as if the equipment had suddenly ceased operation in the midst of heated activity. The engineers knew that Mac didn't allow his men to leave their machines in that condition. Kennely placed his hand on the motors and on the cutting tools. They were hot.

The suggestion of an intangible presence that had suddenly turned off all the machines the moment the door opened was oppressive. Certainly, the engineers knew that such a thing was ridiculous and impossible, yet the impression was there, nevertheless.

"Maybe this is like the old fairy tale," said Devon. "The one about the little shoemaker who went to bed and found

the good little gnome had done his work when he woke up."

Kennely strolled towards the opposite side of the room, glancing down at the silver threads criss-crossing the floor. He stopped and pointed.

"Look, Chris. Maybe these bugs came in with some shipments. Look how these threads all seem to converge on this big box."

"Yeah, that's right. I'd never noticed it before. Wonder what's in the darned thing? Let's have a look."

He took up a hammer from a bench and began ripping at one of the boards, pounding and prying.

Abruptly, a heavy voice said, "Thanks, fellow.—That was just enough to unbalance the blanking matrix. Now we know where the thing is—we can work on salvage."

The engineers felt the short hairs prickle on the backs of their necks.

"Kennely—was that you talking?"

"No—look! Those two guys—who are they?"

Beside the large box, two strangers were staring at the engineers. The two were not more than five feet tall. Their dress was not wholly alien, but the cut of the overall type garments was distinctly unfamiliar.

"Who are you?" Kennely demanded.

"I am Tarman, Chief Transport Agent, American Carriers, and this is our technician, Croul. We lost our valuable cargo and were about ready to pay the three quarters million that it would have cost us. We are certainly grateful to you for unjamming the matrix and helping us locate it. We are not able, however, to spot it exactly with our equipment until you turn off your local radiation. If you would be so kind as to do that, we will move the shipment from your premises."

Kennely and Devon continued to stare while the strangers spoke. It must have been a considerable number of seconds after he was finished that Kennely finally opened his mouth.

"We don't understand all that," he said. "We never heard of American Carriers, much less a system of transport that could lose a cargo such as this inside a building. We thought this box belonged here. Explain yourself."

Tarman paled slightly and turned to Croul, who nodded. "I told you we were in the antique era. We shot clear beyond the delivery date. We'll lose our charter if this gets out. It's happened too often."

Tarman nodded and faced the engineers again. "This must seem all quite strange to you. We operate a transportation system through time, a temporal exchange agency. You know nothing of this, of course, because we have not touched your era before. It is not judged prudent that we do so by the Charter Council.

"The appearance of our cargo here was caused by some malfunction of our equipment, and our present inability to salvage it is caused by the radiation with which you have surrounded it. I trust that you will release it so that we may remove the cargo."

Devon whispered to Kennely, "Are we dreaming, or just crazy? This doesn't happen to a couple of solder slingers like us."

"We're neither—and it is happening to us," Kennely said with a fierce exultation that Devon did not comprehend.

"What kind of a cargo is this?" Kennely asked Tarman.

"I don't know, except that it's a piece of machinery known as an engine co-ordinator. It is used in large industrial plants to guide the processes of a large number of machines. In some manner the plans are scanned within the machine and the shop tools are guided in producing the equipment in the approved technical manner, which has been worked out and set into the engine co-ordinator. Much repetitive engineering is saved because mere rough sketches can sometimes be used to produce finished machines of great complexity. The technical details are already stored in the co-ordinator. Levitation and tractor fields are, of course, generated to handle materials.

"Will you please release our cargo, now?"

"I'm not so sure we want to release it," said Kennely slowly.

Tarman's face went white. "You mean you would attempt to steal it?"

"That's a rough word," said Kennely. "Say, rather, that we'd analyze this machine so that we could duplicate it. Allowing us access to these principles should be fair reward for our return of it."

"That's blackmail! This cargo was due a week ago. We're already paying heavy penalty to the Black Machine Company for nondelivery."

"I'm afraid you're being rather ungenerous. If we hadn't disturbed the box you never would have found it—so you say."

Croul shook his head and looked at his superior. "I understand now why the antique eras are forbidden. Such barbarous relationships—"

"Croul, can't we possibly work through their radiations?"

The technician shook his head. "It's almost impossible to get it into focus. We might remove chunks of the local impedimentia without coming anywhere near the cargo."

"I'm sure we needn't be too concerned about that in view of the attitude the natives have taken. Try it."

"I wonder what radiation they are talking about?" said Devon.

"Maybe the microwave set that Calvert has got on life test upstairs. It's so full of bugs that radiation has been leaking all over for the last two weeks. Everybody's kicking about it. If that's what's keeping this gadget here, we'd better get a proper antenna and spray the place with radiation."

"You're thinking the same thing I am!" said Devon. "If we could copy this machine loaded with the techniques of maybe a thousand years from now—what a position we'd be in to open our business! Hook it up to a shopful of tools and feed in rough blueprints and watch it turn out miracles—like a weather forecaster and a new type color television. We can't let this get away from us!"

"The levitation and tractor fields," said Kennely thoughtfully. "That would explain why it quit working as soon as we came near. Automatic safeguards for the operator."

They noticed now for the first time that they were looking at some kind of a projection of the strangers out of time, rather than at the men themselves. The projection seemed to include the image of some kind of technical plant which the engineers supposed was the equipment involved in transport through time and space.

The figures began to move around before the complex panels.

Kennely said, "Come on. Let's get this Aladin's Lamp opened up."

As they began ripping the crate apart, Tarman gave one last despairing cry. "Stop it, you fiends!"

The engineers continued. They observed that the multitude of silver threads all disappeared through cracks in the crate and disappeared within the black mass of the machine within.

"I'll bet that's a new method of wiring," said Kennely. "It looks as if our friends of the future simply place a machine near other machines and it hooks itself up like a spider spinning a web. Since this is a controlling device for shop machines such as ours, it automatically wired itself up and went to work. Perhaps some jolting due to the mishap of landing here switched on the initial circuits."

"Machines that spin their own hook-up wiring! But you must be right," said Devon incredulously.

Suddenly, there was a whine in the air, like the scream of a shell overhead. The engineers instinctively ducked, then the very earth upon which the plant was built seemed to rock.

The engineers turned slowly, fearful of seeing the walls crumple about them.

Devon pointed towards Mac's pride, the giant brake. "Look!"

Kennely stood agape. Half the brake was gone, sheared cleanly away, and there was a ten-foot hole in the earth beneath the floor.

"They play rough and potent," he said. "Mac is going to feel bad."

"Mac! What about us. Look what would happen if they caught us half in and half out of that electronic cheese knife!"

"I think we'll be safe if we stick close to the gadget. That seems to be the point they can't hit because of Calvert's microwaves."

"But what if they should hit it? Where would we be? Brian! Where *would* we be? If this machine is only a single example of the science of the future, think where we'd be if we could go there and study. Let's make a deal with them. If they'll take us there, we'll let the machine go back."

Kennely shook his head decisively. "No. Absolutely not. It's too dangerous. We know nothing of the time transport machine. Maybe it can't carry live cargo. And I don't trust that guy, Tarman. He'd be just as likely as not to accept the offer, knowing that we'd come through crisped to cinders. I wouldn't want my neck in his noose for anything. We'll figure out some way to get this machine. That will be a big enough jackpot for us."

"And you're the guy that's been shot at by Chinese bandits, South American Indians armed with poison arrow blowpipes, and by Jap fighter planes!"

"Exactly. That's why I say this is too dangerous."

They returned to the attack on the packing case.

"Give me a hand here," said Kennely. "These nails they use are something, too. They expand like fish hooks. Must be a trick of closing them to get them out—"

A second shrilling in the air turned them about. Slowly, as if dissolving in some mysterious acid vapor, a drill press and a section of the turret lathe vanished before their eyes.

"He's coming closer," said Devon.

Kennely tore the last of the packing case away. The machine stood exposed. It seemed featureless until he discovered the almost invisible snaps on the drop panels which revealed the faces of instrument panels complex beyond understanding. The engineers could see no external power connections unless some of the silver threads were tapping the power line. It seemed impossible that such thin carriers could supply the current to operate a complex creation like this.

"It looks like they include a free copy of Webster's Unabridged Dictionary to all cash customers," said Devon. He nodded towards a receptacle where a thick volume reposed. He began to pull it out and glanced at the cover.

"Hey! This can't be . . . it is! Brian, here's an instruction book on how to run the gadget!"

He opened the thick tome to the middle while Kennely looked over his shoulder. He started to read aloud from a random paragraph:

". . . then the six paratempal tubes are connected in cycloid and the field stress advanced to six point three diams. The co-ordinator is shipped from the factory with this adjustment made for standard gravity, but with mass-inertia variations caused by changes in gravity it may be necessary to go through the entire process of setting the horostasis circuit in operation in proper sequence. . . ."

"Cripes, Brian. We can't read this stuff. I'd like to bet that nowhere in these pages does it tell what a paratempal tube is and how it functions. Take any one of our own instruction books. There're a thousand references unexplained to anyone not equipped with the proper background. And we're definitely not equipped with the proper background to savvy this!"

Kennely nodded. "It'd take us months to plow through this and attempt to figure out the references. With Tarman biting chunks out of the plant we can't fool around about it."

They looked back towards the image of the time-distant control room of American Carriers. Tarman and Croul were busy over a computing desk, but they looked up as the men approached the projection.

"Are you ready to give up our cargo?" said Tarman. "We don't want this junk we're picking up from you, but I don't imagine it improves your surroundings to be cut up this way."

"We'll make a deal," said Kennely. "Let us have access to the co-ordinator long enough to copy it and we'll let you have it back."

"We must have it at once. Our charter would be cancelled if this became known."

"Give us twenty-four hours then, and we'll promise to release it."

"Intact?" Tarman's face set suspiciously.

"Intact."

"What will you do during those hours?"

"Try to make what analysis that we can."

"All right," the transportation chief sighed wearily. "I guess another day at this rate of indemnity won't completely ruin us."

"One other thing," said Kennely. "You must promise not to make yourselves apparent until we are alone here again."

"All right. Anything—as long as you promise to return our cargo within that time limit. Good-by."

For a moment the two strangers out of another age glared balefully at the engineers. Then, abruptly, they vanished.

Devon passed his hand over his moist brow and looked around at the shambles in the model shop.

"I suppose it all happened. There'll be proof enough when we hear from Mac and Webber about this—"

"Yeah, it creates something of a problem, all right." Kennely walked over and stared into the depths of the hole where water was slowly accumulating.

"We'll come in in the morning and be surprised as anybody over the wreckage here. Then I'll tell Mac the gadget is equipment I've been looking for on my indicator project. I'll explain it got missent to the model shop and I didn't bother to investigate until I needed it. That ought to hold water."

"What did you mean when you told Tarman you'd return the machine in

twenty-four hours? You know we can't do anything in that time."

"We can't—unless we think of some kind of a deal to make with him. They must want *something* we've got. Anyway, it gives us that much delay and keeps them from biting the whole plant in little pieces."

"O.K. Let's call it a day and clear out of here. We can't do anything tonight. We'll sleep on it and talk it over in the morning."

Devon's sleep during the remaining few hours of the night was anything but restful. His nightmares were filled with enormous termites that were chewing up the house a cubic yard at a time, and he ended up in a cold sweat at five-thirty, looking and feeling as if he'd been on an all-night binge.

He dreaded the idea of going to the plant. Kennely could carry off a thing like this without a flick of an eyelid, but Devon could hardly get away with it. He couldn't josh Mac for getting plastered and tearing the shop apart and become just the right shade haughty at the slightest suggestion that he knew something about the business because he was there last night.

He found what he expected as he walked down the hall towards the model shop on the way to the lab. The entrance was completely blocked by a mob of other engineers and assembly-line workers trying to get a glimpse of the mysterious holes in the floor, and the machinery that had been sliced.

As Devon struggled to ease past the mob, he saw Kennely in the center of things up front, being properly amazed and speculating aloud as to the possible causes. He spotted Devon.

"Chris! Come and see what Mac's been doing!"

The mob parted its ranks to let Devon through. He pushed his way in and stood face to face with the disaster. Webber was there, bleak with mystification and anger, looking for a place to strike.

"The watchman says you and Kennely left around midnight. Kennely says you didn't hear a thing or see any signs of this, then."

"No. Not a thing," said Devon. Somehow the daylight and the mob lent an aspect of magnitude to the disaster that dwarfed his feelings of the night before.

"As I told you," Kennely broke in, "we just unpacked the case to see if it was my missing equipment—"

Webber glowered down into the hole another thirty seconds, then turned to Mac. "Get maintenance to clean this mess up as soon as possible. Reorder the machine tools you need. I'll push the papers through. We can't get much farther behind on the model work. We'll be making last year's equipment next year at this rate!"

Back in their own lab, Kennely and Devon sat down at their desks. "Figure out anything?" asked Kennely.

"Nothing but nightmares all night."

"Me, too. An engineer is no good in a situation like this. An average smart business man would be able to think up a deal that would bring Tarman across pronto. But here we are, can't think of a thing."

"Well, let's get to work. Let's analyze that prognosticator panel and maybe we'll think of something as we go along."

They spent the remainder of the day delving into the complex circuits of the weather forecaster. The components were there; their circuit conections became apparent as the engineers proceeded, but the actual principle of operation was still elusive.

When the entire circuit was finally traced and sketched in their log books, they still had no conception of the means by which these elements could forecast weather factors. They could trace the paths by which voltage was applied to the aneroid barometer action to register the future instead of the present air pressure. They could observe the control tube action which governed that voltage, and traced it back in a complete circle to the aneroid itself, which seemed to provide the controlling impulses.

It was a maddening circle in which something appeared that did not seem at all related to that which was fed in.

As the afternoon waned and the other engineers prepared to go home, Kennely and Devon began building up the circuit again for dynamic tests to try to find the missing factors.

"I've been thinking," said Kennely. "I believe I've got a little deal that Tarman will fall for. Let's knock off now. I'll tell you about it tonight. Let me call for you at your place about midnight. By that time we can be sure that all the apple polishers around here will have gone home."

"Tell me what you've planned."

"I'd rather show you. There'll be plenty of time, and I've got to do a little more thinking on it."

Devon saw no reason for Kennely's

reticence, but he didn't feel like arguing the matter.

"O.K.," he said. "I'll wait for you. I hope you've got something good because Tarman will start chewing up the rest of the plant if we don't let the co-ordinator go back."

"I don't think we're going to have to worry about that, and I think we're going to have our consulting office, too. See you tonight."

Devon drove slowly on the way home. Throughout the day his mind had been furiously active on his own plans—the same plan he had proposed to Kennely the night before.

The appearance of Tarman and Croul, and the revelation of the great science of the world of the future seemed an opportunity that would be criminal to reject. He could not understand Kennely's refusal to attempt to go there because of the supposed danger.

These men of the future seemed civilized. An idea of their morality was indicated by their reaction to the engineers' withholding the co-ordinator. They obviously viewed that as the mark of an inferior culture.

There could hardly be extreme danger in attempting to force a visit to their world. Their reluctance to establish contact could surely be overcome.

But there was another factor, one of the main factors, he admitted to himself. His life had been chained to a slide rule and a desk while Kennely had spent his in adventuring around the world. This was the opportunity for adventure that no deskbound, handbook engineer could afford to pass up no matter what the cost.

The cost—

Martha, Kip and Pat. They represented all the real values of his life. There might be a chance of his not coming back—

He had to take that chance, he told himself desperately. Any man in his place would have to take it. Perhaps to Kennely, who had adventured all his life, it didn't seem like much. Perhaps the mere acquisition of the co-ordinator was enough for him, but to Devon the personal exploration of that future world was even more important than the machine. Besides, what other marvels might be obtained?

His mind was definitely made up. He'd go down to the plant around ten and try to make contact with Tarman and Croul. He'd offer to release the co-ordinator instantly if they'd take him along. They couldn't refuse a request like that.

When Devon arrived home, Martha had a steaming dinner ready. He thought she had never looked quite so pretty as she did that night in the blue gingham and with her face flushed gently with the effort of getting dinner.

"Kip and Pat are ready, darling," she said. "You're late—as usual. Something important doing to-night?"

He kissed her. "Rather. I've got to go back later. About ten."

"Why so late?"

"Some special stuff that depends on time. I don't know how long I'll be."

He didn't know how long he'd be—

He looked at Martha and the children. He couldn't kid himself out of the knowledge that he was planning to gamble them and everything else he had on this fantastic sweep into the future.

But he had to go. Just *had* to—

This would give him and Kennely the one break they needed, he thought. With knowledge of the co-ordinator and other machines like it, they could command the trade of the whole electronic world. They'd be free to develop the research labs they'd always dreamed of.

More than that, it would satisfy the hungry yearning something that Devon had felt when he'd seen Kennely go off to the South Seas during the war to do field engineering in war-contested skies.

It was a sort of desperate need to prove himself. He had to do at least one *big* thing in his lifetime.

He felt guilty as he sat down to listen to the radio for a while. Martha sat on the arm of the chair and talked. He ought to tell her, he thought, but she'd tell him how dangerous it was and how much she and the children needed him, and he wouldn't go.

Ten o'clock approached, and he began looking at the clock apprehensively. Martha said, "I'll fix a sandwich and coffee to take with you."

At just five minutes to ten when he was getting his hat on, the phone rang.

"Hello, Chris," said Kennely. "I haven't got much time to tell you this. Maybe only a couple of minutes. I made a deal with Tarman and Croul. I thought I wouldn't call you, but I wanted to say goodby. I left a note in your desk here—"

"Brian! What are you going to do?"

"The only thing possible, Chris. You know what it is. I saw it in your eyes. That's why I couldn't say anything. Read my note. Got to go now. Tarman's—"

The phone went suddenly dead. Devon dropped it and raced for the front door. "That was Brian, Martha. He's at the

plant now. Got to run. Don't wait up for me."

He ran down the front walk and jumped into the car. He swung savagely away from the curb and into the stream of traffic.

As he drove, the surging hatred within him boiled like steaming, corrosive acid, eating at the structure of the lifelong friendship between him and Kennely.

Kennely had known that Devon planned and wanted to go into the future. That's why he had condemned Devon's plan the previous night. He'd gone on alone, because he couldn't share the adventure and the glory. Devon should have known, instead of being blinded by Kennely's bland insistence upon the danger of the project.

The night lights illuminated the front of the plant in glaring brilliance as he drove through the wide gates. It took him five precious minutes to get the watchman. The latter was disturbed by Devon's agitation.

"Open the model shop," Devon demanded. "I must get in there at once!"

The watchman was a new one and slowly checked Devon's company identification, then turned and led the way with maddening, ponderous omnipotence over engineers who wanted access to the building in the hours when only watchmen reigned.

Sweat was bursting like ripe pods on Devon's face as he surged ahead when the model shop was in sight. It was dark. He pressed his face against the glass and shielded his eyes with his hands. There was no sound or light or sign of human presence.

Devon turned with a start as the slug-like watchman rattled the key. Then he was inside. His finger found the switch, commanded the light that flooded the broad room of the shop.

It was like the agony of waking from the grasping fingers of a dream reluctant to give up its clutch upon his mind. Reality slowly forced back grudging memory and he stood there with a slow sense of devastation swirling about him like a knee-deep flood.

The brake—Mac's six thousand dollar wonder—was there.

Intact.

The machine tools, the floor, the workbenches were just as they had been before the impossible dream out of the future had disturbed Devon's uneventful, handbook life.

It was all as before—

Out of his own disappointments a terrible, corrosive hate distilled through his veins and condensed in the cold chambers of his heart and his brain.

Kennely had been here and made some kind of bargain with Tarman. They had returned the materials slashed from the shop, and Kennely had gone with them. He had gone to steal the show for himself, as always, to keep this ultimate of human experiences for himself alone.

Brian Kennely, the cavalier engineer—

Devon's legs began to move against the sluggishness in them. He moved towards the storeroom where every evidence of the mighty engine co-ordinator had vanished. Then he glanced down and stooped to pick up something from the floor.

The clipped remains of a telephone cord.

So Kennely had been taken just as he was talking with Devon. There was some final, terrible desolation in this. He dropped it quickly and hurried back towards the door where the watchman still slumped against the casing, his eyes squinty with enforced wakefulness and suspicion.

"Open up the developments lab," said Devon. "I'm going to work there the rest of the night."

In the lab, he flooded the place with light and slumped down at his desk. He began rummaging for the note Kennely had said he'd left. Devon finally found it in the middle drawer where Kennely had slipped it through a crack.

For a moment he hated the substance of the note as much as whatever message it might hold, and the man who had written it.

Then he unfolded it and began reading:

O.K., Chris, you're hating my guts right now, but remember what you're always preaching to the dumb junior engineers they hire around here? The right component for the job. Remember? For this job that's me, not you.

You've envied the way I've done things. You've made that plain. But isn't it funny that I've always envied the things you've had, too? Don't you know I'd trade you a thousand times over?

Yeah, Martha and Kip and Pat. Don't you know you can't go barging around acting like a—cavalier—when you've got them?

You wanted that field-engineering as-

signment on the Navy job and you'd probably have had it, too, and those Jap bullets that came so close to me missed maybe because they had *your* number on them. Besides, who'd have slugged out that design on the BC-62 command set? Two or three thousand guys, at least, owe their lives to you for that.

It all adds up to using the right component for the job, and that's only good engineering. You wouldn't try to use a 600 volt by-pass on a 10,000 volt plate supply. Nor a 10,000 volt by-pass in that beautiful little BC-62.

I'm the right component for this job. You're not equipped for it, but you're swell in the job you're doing. Let's not get hashed up with a lot of feedback over this business. I've talked Tarman into smuggling me into his age. He's no different than the Chinese bandits I once slugged it out with in Manchuria, sort of a truck driver and petty racketeer in his own day. He'd have your hide in an hour, Chris. I don't know what I'll find in his territory, but I suspect that there are pretty strict rules against interlopers from unauthorized ages. It won't be easy to fake their customs and mores sufficiently to get by as a local citizen. And then there's the job of getting back if I do succeed in passing myself off and collecting some of their science. Tarman gave me some tips on how it might be done, but I don't trust him. I feel reasonably sure I can do it. This chance at their science is worth the gamble. If I lose there'll be no loss—to Martha and Kip and Pat.

So calm down and squelch those parasitics that are no doubt burning up your plates. Look for me back any time. I'll try to swing my return as close to my departure as possible. But when I come I'll have a slug of stuff that'll make us the top outfit in the business—Devon and Kennely. Better start looking around for some offices. If any of the boys ask about me just say I'm on an indefinite binge. Be looking for me.

BRIAN.

Devon put the letter down slowly. As he did so, he felt as if cooling, placid currents had begun to flow through him, quenching the bitter fires that had raged, and smothering the disappointment.

The right component.

Yeah, that applied to men as well as engineering factors and Kennely was right. He was the component for this job, not Devon.

Was there anything that Kennely didn't understand? Devon wondered. The man's genius extended not merely into the broad field of electronics where he was master, but into all the facets of life.

Devon felt sudden, bitter shame for the feelings he'd had. They were both the right components for the jobs they were doing. As a team they'd be great, as long as he could keep from trying to invade Kennely's half of the partnership.

Right now he had a big enough job to keep him busy until Kennely's return. He had to get an entire new model of the weather station out of the model shop by another week. The Weather Bureau could use the prognosticator circuits, all right, but not in the little remote stations. It would be worth plenty to North State. That aspect of it made Devon momentarily unhappy, but there'd be plenty more where that came from—when Kennely came back.

For a single bleak and bitter moment he considered the alternative to Kennely's return. Then he forced the dark vision out of his mind. Kennely'd be back. He was the right component for the job. That was foolproof engineering.

Devon suddenly leaned back and grinned to himself. There was one nice, unlooked for advantage in Kennely's absence. It would be possible now for somebody else to get a job out of the model shop.

ERRAND BOY

By WILLIAM TENN

The essence of the problem was simply stated; where in blazes did the kid get that can of polka dot paint?

YES, I'm the Malcolm Blyn who phoned you from the village. Mind if I come in and take a seat—I won't take up much of your time? Thanks. Now, here's the story, and if you're the man I've been tearing the country apart for, there's a million in it—

No, please! I'm not selling goldmine stocks or a patent for an internal combustion atomic engine: I'm not selling anything. I'm a salesman all right—been one all my life and I know I look like a salesman right down to my bottom objective—but today I'm not selling anything.

Today I'm buying.

If you have the stuff, that is. The stuff the errand boy said you or someone with your—Listen! I'm not crazy, believe me till you hear it all! Please sit down and listen. He wasn't an ordinary errand boy; he was an errand boy like Einstein is an accountant. The errands he ran! But you must understand . . . here, have a cigar.

Here's my card. *Blyn's Wholesale Paints and Painters' Supplies*—that's me—*Any Quantity of Any Paint Delivered Anywhere at Any Time.* Of course, by "anywhere" we mean the continental United States only. But it looks good on the card. Salesmanship.

That's me, a salesman. Give me something to sell: an improvement, a service or a brand-new crazy novelty gimmick—I guarantee to get people tearing the lining out of their pants pockets. I've always kept Emerson's famous wisecrack framed on my office wall, you know: "If a man can write a better book, preach a better sermon, or make a better mousetrap than his neighbor, though he builds his house in the woods, the world will make a beaten path to his door." Solid stuff. And I'm the guy that gets them interested in beating a path in the first place.

I'm good. I want you to understand that. I can put it over, whatever it is you've got—if only you're the guy that's got it. But I must have something to put over, something good. No hot air. No, I'm not accusing you of putting out the hot air. I don't know yet what you put out—raise chickens, mostly? Yeah. So listen.

Five weeks ago this coming Wednesday, we had a rush job. Three hundred gallons of flat white to the Expando Construction Corporation, an outfit I'd been trying to sell ever since they started up after the war. Eleven o'clock, and they wanted it delivered to their new development over in north Jersey by noon, so their men could start slapping it on the walls right after lunch.

I was out on the floor of the warehouse lighting a fire under Hennessey, my foreman, so he'd light a fire under his crew. Cans of paint were being stacked and shipped as fast as the bank says no to an extension of your loan, men were rolling this way, guys were hustling that way—when I heard Hennessey make a crack.

"Hey, that new errand boy's been gone a long time. Kid must have given up." About a dozen men stopped working and laughed for a while. They could see it was supposed to be funny—Hennessy was their boss.

"Since when do we have a new errand boy?" I stopped Hennessey in his tracks. "I do all the hiring and firing around here. Any new personnel have to go on the books—a dozen different ones these days. Do you want to get me into trouble? Haven't you ever heard of Social Security? Child Labor Laws? How old is the kid?"

"Aw, Mr. Blyn, how should I know? They all look alike to me. Maybe nine, maybe ten, eleven. A lot thinner than most kids I've seen, but a lot healthier. Looks—sorta rich."

"Well, if he's that young, he's got no business in the warehouse district this early in a weekday. Probably on the hook. I'll have the New York Board of Education on my neck as well as the working papers people. Don't I have enough trouble, Hennessey, with two road-happy truck drivers who use a Pennsylvania map to get lost in New Jersey, without—"

"I didn't hire him, honest. He come around here asking for a job in that funny voice like kid stars have in the movies. He says he's willing to start at the bottom and prove himself, he feels

he's bound to rise, he's got the will to win, all he wants is a chance. I tell him the way business has been lately we wouldn't hire Alexander Graham Bell to run our switchboard. He says he doesn't care; he wants to get a foot on the ladder of success. He'll work for nothing."

"So?"

"So, I make out I'm thinking—at ten this morning, things were slow on the floor—and finally I say I'll give him a crack at trying out for errand boy. I hand him an empty can and say I want it filled with green paint—it should have orange polka dots. I'm testing him, see? He grabs the can and takes off. He won't bother us any more. You shoulda seen the guys after he left, Mr. Blyn: they fit to died."

"Hold me up," I said. "I'm getting weak myself. Almost as funny as the time you locked Whalen in the washroom with a stink bomb. That reminds me—you'll be taking orders from Whalen if your crew doesn't get that truck loaded and out of here in ten minutes."

He wiped his hands on his overalls and started to say something. Then he changed his mind and began yelling up and down the warehouse. He asked his men if they didn't think it was time to crawl out of their coffins, he told them to get their mass behind every dolly that wasn't being used, he got the place hissing where before it was only humming.

One thing about Hennessey: he might have been a practical joker from way back when he found all the amusing things you could do with diapers; but he was one crackerjack foreman. The way he made those monkeys hustle reminded me of the way I fit a fountain pen in a customer's hand just before he begins to purse his lips.

Then the kid walked in.

"Hey, Ernest," somebody yelled. "Look. Ernest's back."

Work stopped. The kid walked in, breathing hard, and set the can down in front of Hennessey. He was dressed in a white blouse, patched corduroy pants and high-laced brown shoes. But I'd never seen corduroy like that before, or that kind of white broadcloth in a shirt. The material seemed to be very thin—and, well, rich somehow. That's the only way to describe it. Like imitation iron.

"Glad you're back, kid," Hennessey told him. "I've been needing a left-handed paintbrush. Shop around and see if you can pick one up for me. But it must be left-handed."

A couple of characters on the loading platform started to chuckle. The kid started out. He turned at the big sliding doors.

"I'll try, sir," he said in a voice like he had a flute in his throat. "I'll do my best. But this paint—I couldn't find any green paint with orange polka dots. This only has red polka dots. I hope it will do."

Then he left.

For a moment we all stared at the patch of sidewalk where he'd been standing. Then I laughed; in a second the roars were bouncing off the second-story ceiling. The men just stood there with dollies and paint stacked on them, laughing their heads off.

"Hennessey, the wise guy!" someone yelled.

"All I could find was green paint with red polka dots!"

"Please, sir, I hope it will do. Wow!"

"Did that kid let you have it!"

"Poor Hennessey!"

Hennessey stood there, his great big fists hanging at his sides and no one to use them on. Suddenly he noticed the can of paint. He drew his right leg back and came tearing at it with a kick that would have sent it into Long Island Sound. Only he missed it. He just touched a corner of the can—rocking it enough to spill a drop—missed his foot and came smashing down on his sitting apparatus. The roars got louder as he scrambled to his feet.

In a second, the laughter had stopped cold and everyone and his brother was hustling again. Not a man in that warehouse wanted to attract Hennessey's attention after his joke had backfired.

Still chuckling, I strolled over and looked at the can. I wanted to see what junk the kid had used to fill it. Looked like water. The liquid in the can was mostly transparent, with little brown flecks floating around. Not paint, certainly—no kind I knew.

I glanced at the floor where a drop had been spilled when my foreman tried to kick the can.

I began strangling on a howl.

The junk the kid had used to fill the can—the junk had been green paint with red polka dots. *Red polka dots!*

No doubt at all: a little oval puddle dripped up to the side of the can; the warehouse floor now had a spot painted green with red polka dots. And this kid

—this errand boy—this Ernest—had found it somewhere.

One thing I told you I can tell. Salability. I can tell the salable something in somebody else's dream at night when I'm sleeping on the other side of town. I can sniff it—but, you know all that. But do you know how salable that kind of paint would be? Sell it as a sure-fire novelty to manufacturers, sell it as a gimmick to guys who putter around their own home, sell it as a brand new idea in design to interior decorators. It's a natural; it's a gold mine.

But I had to move fast. I picked up the can by the wire handle; I scuffed the paint spot carelessly with my foot. Luckily, it seemed to take a long time to dry: it mixed with the dust on the floor and lost its color. I walked out into the street where Hennessey was standnear the truck watching his crew load.

"What did you say that kid's name was? Ernest?"

He looked up. "Yeah," he brooded. "Ernest. Didn't give me his last name. But if he ever shows his wise puss around here—"

"O.K. I have an important business appointment. Take over until I get back and get that flat white out." I turned and started in the direction the kid had gone. I knew Hennessey was staring at the can of paint I carried swinging from my left hand. He was wondering what I wanted with it, with the kid. Let him wonder, I told myself. Give Hennessey the curiosity; I'll take the profit.

I caught sight of the kid about three blocks away; he was going east, in the direction of the park. He stopped in front of a hardware store, thought a moment, walked in. By the time he came out again, I'd caught up with him. He was shaking his head unhappily.

We walked side by side for a while before he noticed me. I couldn't get over those clothes of his. Even the old-fashiond high shoes he was wearing weren't made out of anything I'd ever seen; the material hugged his foot like another layer of skin; it wasn't leather, I was sure of that.

"No luck?" I asked.

He jumped and stared a bit. Then he seemed to recognize the face as one of those that had been staring at him a while ago. "No. No . . . er, luck. The distributor said he was very sorry but he was just this moment fresh out of left-handed paint-brushes Exactly what they all said when I asked them for the paint with the polka dots. I don't mean any offense, but . . . but this *is* an inefficient method of circulating goods."

I watched his face while he said that. Really meant every word of it. What a kid! I stopped and scratched my head. Should I come right out and ask him where he'd found the paint, or should I let him talk into the secret most people will usually do?

He had turned pale and then began blushing. I didn't like to see that in a boy. That musical soprano voice was bad enough, his thinness for a kid his size—he was almost as tall as me—I could take; but a boy who blushed had evidently never met a real school bully.

"Look, Ernest," I began. I reached out and put my hand on his shoulder, you know, fatherly like. "Ernest, I—"

Zing! He jumped backwards as if I'd gone to work on his neck with a can opener. And blush! Reminded me of a bride who'd led a full life and was going her rosy best to convince the groom's mother at the altar that she hadn't.

"Don't *do* that," he said, shaking himself all over.

Better chance the subject. "Nice outfit you've got there. Where did you get it?" Subtle, you know. Catch him off guard.

He looked down complacently. "It was my costume in the school play. Of course, it was a little off-period, but I thought—"

His voice trailed away awkwardly like he'd just realized he was breaking a lodge secret. This thing had angles, all right.

"Where do you live?" I shot at him fast.

"Brooks," he came right back.

I thought that over. No, it couldn't be. "Brooks?"

"Yes, you know—Brooks. Or maybe it's Brooklyn?"

I stroked my chin, trying to work it out. He was shuddering again.

"Please," he said in that high voice. "Please. Do you have to skinge?"

"Do I have to what?"

"Skinge. Touch your body with your hands. In a public place, too. Spitting and belching are bad enough—though most of your people avoid it. But everyone—everyone is always skinging!"

I took a deep breath and promised him I wouldn't skinge. But if I wanted to see his hole card, I'd have to flip mine over first. "Look, Ernest, what I wanted to say . . . well, I'm Malcolm Blyn. I—"

His eyes widened. "The robber baron of the warehouse!"

"The *what?*"

"You own Blyn's Paints. I saw your name on the door." He nodded to himself. "I've read all the adventure stories. Dumas . . . no, Dumas isn't right . . . Alger, Sinclair, Capon. Capon's 'The Sixteen Salesmen,' there's one fully conscious book! I read it five times. But you wouldn't know Capon, would you? He wasn't published until—"

"Until when?"

"Until . . . until . . . oh, I can't tell you. You're one of the ruling powers: you own a warehouse. I don't come from here."

"No? Where do you come from?" I had my own ideas on that. Some overeducated rich kid—a refugee, maybe, to account for his accent and slenderness.

"From the future. I shouldn't have done it; it may mean my being set back a whole responsibility group, but I just had to see the robber barons with my own eyes. Wolf bait! I wanted to see them forming pools, freezing out competitors, getting a corner on—"

"Hold the economics, Jackson! From the *future*, did you say?" This kid was getting too big from his corduroy britches. *Corduroy* britches?

"Yes. According to the calendar of this time . . . let me see, and this part of the world, it would be . . . oh, the year 5930. No, that's still another calendar. According to *your* calendar I came from 2169 A.D. Or is it 2170? 2169, I think."

I was glad he'd settled the point to his satisfaction. I told him so, and he thanked me. And all the time, I was thinking: if this kid's crazy, or if he's lying, how came paint that brushes out green with red polka dots? And how come his clothes? They hadn't been made in any factories I'd ever heard of. Check.

"This paint . . . that come from the future . . . from your time?"

"Well, the shops were all out of it, and I wanted to prove myself to Hennessey . . . he's a real swashbuckler, isn't he? I went home and probed the spirrillix, and finally I found—"

"What's this spirrillix deal?"

"The spirrillix—the rounded usicon, you know. Your American scientist Wenceslaus invented it just about this time. I *think* it was just about this time—I remember reading of the trouble he had getting it financed. Or was it this time? Yes, I think—"

He was starting another of those debates with himself. I stalled him off. "O.K. What's the difference, a hundred years more or less. This paint: do you know how it's made, what's in it?"

"How it's made." He swung a high-booted foot around in a little circle and studied it. "Well, it's hydrofluoric acid, of course. Triple-blasted. Although the container didn't mention the number of times it had been blasted. I *assume* it was triple-blasted, though—"

"Sure, sure. What do you mean—blasted, triple-blasted?"

A mouthful of perfect white teeth flashed out as he laughed right up and down the scale. "I wouldn't know that! It's all part of the Schmootz Dejector Process—my conditioning is two whole responsibility groups behind the Schmootz Process. I may never even reach it if I do well enough in self-expression. And I like self-expression better than conditioning; I only have two hours now, but—"

He raved on and on about how he was persuading some committee or other to give him more self-expression; I concentrated on worrying. This wasn't so good. I couldn't expect to import much more of the paint from this kid's hunting ground; my only hope was analysis of the sample he'd given me. And with this hydrofluoric acid and triple-blasting deal that didn't look so good.

Figure it out. Man has had steel for a long time now. But take some heat-treated steel from the best factory in Gary or Pittsburgh back to the time of that chemist character Priestley. Even if he had a modern lab available and knew how to use the equipment in it, he wouldn't be able to find much useful information. He'd know it was steel maybe, and he might even be able to tell how much carbon, manganese, sulphur, phosphorus and silicon it contained in addition to iron—if someone gave him a briefing on modern elementary chemistry, that is. But how it had acquired its properties, where its elasticity and tensile strength came from—the poor guy wouldn't know from nothing. Tell him "heat-treatment," "inward combustion of the carbon," and all he'd be able to do is open and close his mouth like a fish in Fulton Market wondering what happened to all the water.

Or spun glass. They had glass way back in ancient Egypt. Shove some of that shiny fabric we have at them, though, even say it's *spun* glass. They'd say, "Yah, sure. Have another piece of pie."

So I had the paint. One can of it hanging from my sweaty little palm. But it looked like a one-shot proposition unless I could be foxy grandpa himself—or, con-

sidering the kid, foxy great-great-great-grandpa.

Standing in front of me was the greatest errand boy a greedy businessman ever saw. And let me tell you I'm greedy; I admit it. But only for money.

How to swing it? How to turn this kid's errands into nice, bulging mounds of green paper with lots and lots of zeros on them? I didn't want him to get suspicious or upset; I didn't want him to feel I was using him as the tool I intended using him as.

I had to be a salesman; I had to sell him a bill of goods. I had to get him running the errands right, with a maximum of profit to all concerned, especially me.

Carelessly, I started walking in the direction he'd been going. He swung along beside me. "Where's your time machine, Ernest?"

"Time machine?" His delicate face wrinkled. "I don't have any time ma—Oh! You mean the chrondromos. Time machine—what a thought! No, I sunk a small chrondromos for my own personal use. My favorite father is an assistant engineer on the main chrondromos—the one they use for field trips? I wanted to go unsupervised for this once, no carnuplicators or anything. I wanted to see the ragged but determined newsboys rising steadily to riches. I wanted to see the great, arrogant robber barons like yourself—perhaps, I thought, I might even come across a real economic royalist! And I might get involved in some great intrigue, some market manipulation where millions of small investors are closed down and lose their last shred of . . . what is it again? . . . margin?"

"Yeah, they lose all their margin. Where did you sink this . . . this chrondromos?"

"Not where—*when*. I sank it after school. I'm supposed to be having self-expression now, so it doesn't make much difference. But I hope I can get back before a Census Keeper winds a total."

"Sure you can. I wouldn't worry about it. Uh . . . can I use this chrondromos of yours?"

He laughed his scorn at my foolishness. "How can you? You have no conditioning, not even responsibility group two. No, you wouldn't know how to begin to unstable. I'll be glad to get back. Not that I haven't enjoyed myself. Wolf bait! To think I met a robber baron! This has been one fully conscious experience."

I dug into my tweed jacket and lit a baronial cigarette. "Guess you wouldn't have much trouble finding a left-handed paint brush."

"Well, it might be difficult. I've never heard of one before."

"One thing I was wondering." I flicked ashes elaborately onto the sidewalk. "Do you have anything that sees ahead in time?"

"A revolving distringulatrix, you mean? There's one at the main chrondromos. I don't know how it works; they don't allow anyone from responsibility group four near it—you have to be at least six or seven."

Nasty. It had looked good. I might be able to persuade the kid to ferry back and forth with a couple or more cans of paint—but it would never amount to much. Especially if I couldn't get an analysis that would enable me to produce the stuff with present day methods. But if I could get a gadget from the future—something I wouldn't have to sell, something I could make a million out of just by using it myself—Like a dingus for seeing into the future: predict race results, elections, sweepstake winners.

The dingus was there all right. This revolving distringulatrix. But the kid couldn't lay his hands on it. Nasty, I tell you.

"What about books? Got any books lying around the house: chemistry books, physics texts, pamphlets on industrial methods?"

"I don't live in a house. And I don't study from books. Not chemistry or physics anyway. That's all handled by conditioning. I had six hours of conditioning last night—examinations are coming, you know."

My tongue knotted with the frustration of it. Millions of bucks walking next to me and I didn't know how to turn it into cash. Ernest had evidently seen all he wanted to see of the present, at least temporarily—hadn't he seen a real, live, robber baron?—and he was heading home to mama and self-expression.

There must be an angle, somewhere!

"Where'd you plant your chrondromos? I mean, where's its other end come out?"

He waved ahead. "Behind a big rock in Center Park."

"Central Park, you mean. Mind if I tag along, watch you leave?"

He didn't. We padded across Central Park West and turned up a little unpaved path. I pulled a dry bough off a tree and switched it across my ankles; I just had

to think of something before he took off. I began to hate the can of paint; it was light enough, but it looked like such a puny item to get out of the whole deal. Especially if it couldn't be analyzed.

Keep the kid talking. Something would turn up.

"What kind of government do you have? Democracy, monarchy—"

There he went laughing at me again! It was all I could do not to smash him across the face with the switch. Here I was losing fortunes right and left, and he thought I was making like a comic!

"Democracy! But you would think in political terms, wouldn't you? You have to consider your sick individuals, your pressure groups, your— No, we passed that stage long before I was born. Let me see, the last president they manufactured was a reversibilist. So I imagine you could say we are living in a reversibilism An unfulfilled one, though."

That helped a lot. Solved everything. I sort of dropped down into a moony yearning for an idea, any kind of an idea. Ernest skipped along chattering about things with unpronounceable names that did unbelievable deeds. I thought unprintable words.

"—I get in responsibility group five. Then there are the examinations, not at all easy this time. Even the trendicle may not help."

I cocked an ear at him. "What's with this trendicle? What does it give out?"

"It analyzes trends. Trends and developing situations. It's really a statistical analyzer, portable and a little primitive. I use it to determine the questions I'll be asked in the examinations. Oh, I forgot —you probably have the scholarship superstitions of your period. You don't believe that the young should anticipate questions based on the latest rearrangements in the world, on the individual curiosities of their instructors. There it is!"

High up on a little wooded hill was a gray and careless rock formation. And, even at that distance, I could see a transparent, shimmering blue haze behind the largest rock.

Ernest beat it off the road and scurried up the hill. I choked after him. There wasn't much time; I had to think it out fast—this trendicle looked like the goods.

I caught up to him just as he reached the large rock. "Ernest," I wheezed, "how does your trendicle go?"

"Oh, it's simple. You punch all available facts into it—regular keyboard, you know—it analyzes them and states the only possible result or shows the trend the facts indicate. Built-in Skeebee power system. Well, good-by, Mr. Blyn."

He started for the blue haze where it was thickest on the ground. I wrapped my paw around his chest and pulled him back.

"There you go again. Skinging!" he wailed.

"Sorry, kid. The last time. How would you like to be in on a really big deal? Before you go back, you might like to see me get control of an international trust. I've been planning it for some time—one of the biggest bull markets. Wall Street has never seen my secret gilt-edged because I have a broker planted in Chicago futures. I'll hurry it along and do it today, just so you can see how we robber barons operate. The only thing is, this trendicle deal will make it sure-fire and I'll be able to do the whole thing much faster. What a spectacle! Hundreds of banks failing, I get a corner on synthetic rubber, the gold standard crashes, small investors frozen and down to their bottom margin! You'll see it all. And if you get the trendicle for me, why I'd let you handle the capitalization."

His eyes shone like brand-new dimes. "That would be fully conscious! Think of my getting involved in financial battle like that! But it's so risky! If a Census Keeper winds a total and finds I've been subtracted— If my guide catches me using a chrondromos illegally—"

I'm a salesman, I told you. I know how to handle people. "Suit yourself," I said, turning away and stepping on my cigarette. "I just thought I'd offer you the chance because you're a nice kid, a bright boy; I think you'll go far. We robber barons have a lot of pride, you know. It isn't every errand boy I'd trust with anything so important as capitalization." I made as if to walk away.

"Oh, please, Mr. Blyn!" He sprinted around in front of me. "I apprecate your offer. If only it weren't so dangerous— But danger—that's the breath of life to you, isn't it? I'll do it. I'll get you the trendicle. We'll rip the market open together. Will you wait?"

"Only if you hurry," I said. "I have a lot of manipulating to do before the sun goes down. Take off." I set the can of paint on the grass and crossed my arms. I swished the dry bough back and forth like the widget kings go in for—scepters.

He nodded, turned and ran into the blue haze behind the rock. His body sort

of turned blue and hazy, too, as he hit it; then he was gone.

What an angle! I mean, *what an angle.* You get it, don't you? This trendicle—if it was anything like the kid described it—could practically be used the way I said I was going to use it, in that fast double-talk shuffle I'd handed him. Predict movements of the stock market up and down—sideways even!—anticipate business cycles and industrial trends; prophesy war, peace and new bond issues. All I'd have to do would be to sock the facts into it—all the financial news let's say of the daily paper—and out would come multitudes of moolah. Was I set.

I threw my head back and winked at a tree top. I sang,

"Mother had a baby,
His name was Malcolm Blyn;
She made of him a salesman
A fortune for to win!"

Honestly, I felt drunk. I must have been drunk. Because I'd stopped figuring. Just shows—never stop figuring. Never!

I wandered up to the shimmering blue haze and put my hand out toward it. Just like a stone wall. The kid had been giving me the straight goods on this conditioning deal.

He was a nice kid. Ernest. Nice name. Nice.

The haze parted and Ernest ran out. He was carrying a long, gray box with a cluster of white keys set in one end. Looked like an adding machine that had been stretched.

I plucked it away from him. "How does it work?"

He was breathing hard. "My guide . . . she saw me . . . she called me . . . I hope she didn't see me go into the chrondromos . . . first time I've disobeyed her . . . illegal use of chrondromos—"

"Sure," I said. "Sure. Very sad. How does it work?"

"The keys. You punch the facts out on the keys. Like the ancient—like your typewriter. The resultant trend appears on the small scamper."

"Pretty small. And it'll take a terrifically long time to type out a couple of pages of financial news. Those stock listings, especially. Don't you people have anything that you just show the paper to and it burps out the result?"

Ernest looked puzzled. Then, "Oh, you mean an *open* trendicle. My guide has one. But it's only for adults. I won't get an open trendicle until responsibility group seven. With good leanings toward self-expression."

There he went on that self-expression gag. "Then that's what we need, Ernest. Suppose you trot back and pick up your guide's trendicle."

I've never seen so much shock on anyone's face in my life. He looked as if I'd told him to shoot the president. The one they just manufactured.

"But I told you! It isn't mine—it's my guide's!"

"You want to be in charge of capitalization, don't you? You want to see the greatest coup ever pulled in Wall Street—lambs fleeced, bears skinned, bulls broken? Go back to your guide—"

"You are discussing me?" A very sweet, very high voice.

Ernest twisted around. "Wolf bait! My guide," he fluted.

A little old lady in a nutty kind of twisted green dress was standing just outside the haze. She was smiling sadly at Ernest and shaking her head at me. I could tell the difference.

"I hope you are satisfied, Ernest, that this period of high adventure was in reality very ugly and peopled by individuals infinitely small. We've become a little impatient with the duration of your unstabling, however. It's time you returned."

"You don't mean—the Census Keepers didn't *know* all along that I was illegally using a chrondromos? They allowed me to do it?"

"Of course. You stand very high in self-expression; an exception had to be made in your case. Your involved and slightly retarded concepts of the romanic aspects of this era made it necessary to expose you to its harshness. We couldn't pass you into responsibility group five until you had readjusted. Come, now."

It was about time for me to break into the conversation. Between Ernest and the old lady, it sounded like a duet with fife and piccolo. Such voices!

"Just stay unstabled a second," I said. "Where do I come into all this?"

She turned hostile eyes to me. "I'm afraid you don't. We are removing it from you. The various items you have received from our time . . . you should never have gone so far, Ernest . . . will also be removed."

"I don't see it that way." I reached out and grabbed Ernest. He struggled, he had muscles in the strangest places; but

I had no trouble holding on to him. I lifted the bough threateningly over his head.

"If you don't do just as I tell you, I'll hurt the boy. I'll . . . I'll skinge all over him!" Then I had an inspiration. "I'll demobilize him! I'll fragisticate every last bone in his body."

"Just what do you want?" she asked very quietly in that thin voice.

"That trendicle you have. The one without keys."

"I'll be back shortly." She turned with a twinkle of the green dress and faded back into the chrondromos. Just like that.

One of the neatest deals I've ever swung. Just like that! And guys work for a living.

Ernest writhed and twisted and shuddered, but I held him. I wasn't letting him go, no sir! He represented millions of dollars.

The blue haze shimmered again and the old lady stepped out. She carried a circular black thing with a handle in the center.

"Now, that's more like—" I started to say as she pulled the handle.

And that was all. I couldn't move. I couldn't even wiggle the hairs in my nose. I felt like my own headstone.

The kid darted away. He picked up the small trendicle where I'd dropped it on the grass and ran to the old lady. She reached up with her free hand. She was speaking to him:

"A definite pattern, Ernest. Selfishness, cruelty, little wisdom. Avarice without the faintest signs of a social—" Her hand came down and the blue haze disappeared. I bounded forward, but there was empty air behind the rock as if they'd never been there.

Not quite.

The can of paint still sat on the ground where I'd parked it. I chuckled and reached for it. There was a sudden flicker of blue.

The can disappeared. A musical voice said, "Ooops. Sorry!"

I whirled. Nobody there. But the can was gone.

For the next half hour, I almost went crazy. All that stuff I could have had. All the questions I could have asked and didn't. All the information—money-making information—I had missed.

Information. Then I remembered. Wenceslaus. The kid had said someone named Wenceslaus had invented the spirrillix about this time; had a lot of trouble financing it. I don't know what it is: maybe it stuffs ballot boxes; maybe it enables you to scratch your left elbow with your left hand. But whatever it is, I made up my mind right then, I'm going to find it and sink every penny I have into it. All I know about it is that it's

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MUFFED CHANCES

In the 1870s, Crookes, Faraday, and a dozen other major experimental physicists were playing with the fascinating mysteries of the cathode-ray tube. Crookes showed that the mysterious agency in the tube would push a little paddlewheel around. It was known that the radiation, whatever it was, traveled in straight lines. They showed that by setting up a little metal cross between the cathode and anode, the glowing anode was shadowed by the metal cross.

Twenty-five years later, somebody finally got around to making the shadow of the metal obstruction cover all but one small spot on the anode—and the modern form of the cathode-ray tube was almost finished. Within a few years after that small switch—from large luminous area-small shadow to large shadow-small luminous area—the electron had been nailed down.

Again almost fifteen years elapsed before the next step was made—and it was made almost accidentally, and from an entirely different line of attack. Lee DeForest didn't even consider the cathode-ray tube when he invented the triode amplifier tube—yet a cathode-ray tube beautifully and visibly demonstrates the basic phenomenon.

In the 1870s, no one could guess that the cathode-ray tube was one of the greatest of scientific investigation tools. But, on the other hand, electric power was beginning to come in, and physicists were needed to figure out why a certain type of motor worked better than another, and what could be done about making an electric arc light small, safe, and cheap enough for home lighting. Then when Edison showed that the arc light wasn't the answer, physicists had to find better materials for incandescent lights. Of course, in the process of discovering the cathode-ray tube, physicists had invented the gas-glow discharge tube, and the German glass blower, Herr Geisler, had done everything but shape them into advertising signs of the modern "neon" type. (He didn't use neon, however; it hadn't been discovered. But he did make them in whirls, loops, spirals, bulbs, knots and whatnot. He had red, green, yellow, blue, and anything else you wanted, including pure white.) But despite their knowledge of the gas-glow tube, the very difficult problem of the incandescent lamp was tackled and, eventually, solved before science and engineering finally got round to going back to the ultramodern fluorescent lamp, and to the still newer cold-cathode fluorescent. (And that, friends, is a perfectly straight, unmodified Geisler tube—with improved fluorescent materials. They could have made the things in 1870!)

Diverted into these new fields—and into the study of electromagnetic radiation, ably led by Clerk Maxwell and Heinrich Hertz—they parked the cathode-ray tube on the discarded appartus shelf, and forgot it for fully a quarter century.

Let's see what they might have done. If they'd made the pinhole bright-spot type of cathode-ray tube in 1875, the electron would have been pinned down in 1880. They would have known about electron-beam deflection by magnetic and electric fields; Maxwell's electro-magnetic equations would have made more sense to them.

In 1879, let's say, some bright lad in the laboratories tries the effect of applying a charge of the metal disk-with-a-hole that produces the bright spot on the glowing anode. In about ten seconds he'd discover that the effective size of the hole varied with charge applied to the plate. (The principle used to make light and dark portions in the picture on a television receiver tube. The cathode-ray

beam is cut off or on by charge applied to the beam-defining hole in the tube's electron gun.)

From that, it wouldn't take too wild a leap of ingenuity to try putting a grid of parallel wires in the tube; by charging the wires differently, they could be made to pass varying numbers of electrons; the glow on the anode would vary visibly. And, incidentally, the current flowing through the tube would vary.

By 1885, a perfectly good triode amplifier tube could have been set up. Working at the thing from the cathode-ray tube approach, where the effect of grid wire size and spacing would have been visible, considerably faster progress could have been expected.

I won't say that radar would have been used in the Spanish-American war—but Hertz had used the basic radio-reflection principles long before that time, in his original experiments.

Certainly, by dropping the cathode-ray tube just when they did, at just the critical point, they muffed the big chance.

Time after time in science, the same thing has happened. Because we never know just which laboratory gadget is the rough form of the key to a great domain, we muff one great chance after another.

Wonder which obscure, discarded bit of apparatus now in some closet is the one we're muffing today? And what's the domain it would open to us, properly developed? Gravity? A couple of new radiation spectrums? Or something whose very existence we haven't imagined?

THE EDITOR.

ERRAND BOY

(*Continued from page* 47)

some sort of gimmick; it does things—and it does them good.

I got back to my office and began hiring detectives. You see, I'd already figured that it wouldn't be enough to check phone listings—my Wenceslaus of the spirrillix might not have a phone. He might not even call the gadget a spirrillix; that could be the name Ernest's people fastened on it.

Well, I didn't go into detail with the detectives. I just told them to find me people named Wenceslaus or close to it, anywhere in the country. I interview them myself. I have to tell them the whole story, so they'll get the feel of the thing, so they'll be able to recognize the spirrillix if they've invented it.

That's where you come in, Mr. Wantzilotz. Anyone with a name so close can't be missed. Maybe I didn't hear Ernest right; maybe the name was changed, later.

Now you've heard the story. Think, Mr. Wantzilotz. Are you working on anything besides raising chickens? Are you inventing anything, improving on anything—

No, I don't think a homemade mousetrap is quite what I want. Have you written a book, maybe? Thinking of writing one? Developing a new historical or economic theory—the spirrillix might be anything! You haven't.

Well. I'll be going. You don't have any relatives of the same name who fool around with tools and stuff—no? I've got a lot of people to visit. You'd be amazed at the number of Wenceslauses and variations there are—

Wait a minute. Did you say you'd made—you'd invented a new mousetrap? Hm-m-m.

Here, have another cigar. Sit down. Now tell me, this mousetrap of yours—just how does it work? It catches mice, yes. But what does it *do?*

TIME AND TIME

By H. BEAM PIPER

To upset the stable, mighty stream of time would probably take an enormous concentration of energy. And it's not to be expected that a man would get a second chance at life. But an atomic might accomplish both—

BLINDED by the bomb-flash and numbed by the narcotic injection, he could not estimate the extent of his injuries, but he knew that he was dying. Around him, in the darkness, voices sounded as through a thick wall.

"They mighta left mosta these Joes where they was. Half of them won't even last till the truck comes."

"No matter; so long as they're alive, they must be treated," another voice, crisp and cultivated, rebuked. "Better start taking names, while we're waiting."

"Yes, sir." Fingers fumbled at his identity badge. "Hartley, Allan; Captain, G5, Chem. Research AN/73/D. Serial, SO-23869403J."

"Allan Hartley!" The medic officer spoke in shocked surprise. "Why, he's the man who wrote 'Children of the Mist,' 'Rose of Death,' and 'Conqueror's Road'!"

He tried to speak, and must have stirred; the corpsman's voice sharpened.

"Major, I think he's part conscious. Mebbe I better give him 'nother shot."

"Yes, yes; by all means, sergeant."

Something jabbed Allan Hartley in the back of the neck. Soft billows of oblivion closed in upon him, and all that remained to him was a tiny spark of awareness, glowing alone and lost in a great darkness.

The Spark grew brighter. He was more than a something that merely knew that it existed. He was a man, and he had a name, and a military rank, and memories. Memories of the searing blue-green flash, and of what he had been doing outside the shelter the moment before, and memories of the month-long siege, and of the retreat from the north, and memories of the days before the War, back to the time when he had been little Allan Hartley, a schoolboy, the son of a successful lawyer, in Williamsport, Pennsylvania.

His mother he could not remember; there was only a vague impression of the house full of people who had tried to comfort him for something he could not understand. But he remembered the old German woman who had kept house for his father, afterward, and he remembered his bedroom, with its chintz-covered chairs, and the warm-colored patch quilt on the old cherry bed, and the tan curtains at the windows, edged with dusky red, and the morning sun shining through them. He could almost see them, now.

He blinked. He *could* see them!

For a long time, he lay staring at them unbelievingly, and then he deliberately closed his eyes and counted ten seconds, and as he counted, terror gripped him. He was afraid to open them again, lest he find himself blind, or gazing at the filth and wreckage of a blasted city, but when he reached ten, he forced himself to look, and gave a sigh of relief. The sunlit curtains and the sun-gilded mist outside were still there.

He reached out to check one sense against another, feeling the rough monk's cloth and the edging of maroon silk thread. They were tangible as well as visible. Then he saw that the back of his hand was unscarred. There should have been a scar, souvenir of a rough-and-tumble brawl of his cub reporter days. He examined both hands closely. An instant later, he had sat up in bed and thrown off the covers, partially removing his pajamas and inspecting as much of his body as was visible.

It was the smooth body of a little boy.

That was ridiculous. He was a man of forty-three; an army officer, a chemist, once a best-selling novelist. He had been married, and divorced ten years ago. He looked again at his body. It was only twelve years old. Fourteen, at the very oldest. His eyes swept the room, wide with wonder. Every detail was familiar: the flower-splashed chair covers; the table that served as desk and catch-all for his possessions; the dresser, with its mirror stuck full of pictures of aircraft.

AGAIN

It was the bedroom of his childhood home. He swung his legs over the edge of the bed. They were six inches too short to reach the floor.

For an instant, the room spun dizzily, and he was in the grip of utter panic, all confidence in the evidence of his senses lost. Was he insane? Or delirious? Or had the bomb really killed him; was this what death was like? What was that thing, about "ye become as little children"? He started to laugh, and his juvenile larynx made giggling sounds. They seemed funny, too, and aggravated his mirth. For a little while, he was on the edge of hysteria and then, when he managed to control his laughter, he felt calmer. If he were dead, then he must be a discarnate entity, and would be able to penetrate matter. To his relief, he was unable to push his hand through the bed. So he was alive; he was also fully awake, and, he hoped, rational. He rose to his feet and prowled about the room, taking stock of its contents.

There was no calendar in sight, and he could find no newspapers or dated periodicals, but he knew that it was prior to July 18, 1946. On that day, his fourteenth birthday, his father had given him a light .22 rifle, and it had been hung on a pair of rustic forks on the wall. It was not there now, nor ever had been. On the table, he saw a boys' book of military aircraft, with a clean, new dust-jacket; the flyleaf was inscribed: *To Allan Hartley, from his father, on his thirteenth birthday*, 18/7/'45. Glancing out the window at the foliage on the trees, he estimated the date at late July or early August, 1945; that would make him just thirteen.

His clothes were draped on a chair beside the bed. Stripping off his pajamas, he donned shorts, then sat down and picked up a pair of lemon-colored socks, which he regarded with disfavor. As he pulled one on, a church bell began to clang. St. Boniface, up on the hill, ringing for early Mass; so this was Sunday. He paused, the second sock in his hand.

There was no question that his present environment was actual. Yet, on the other hand, he possessed a set of memories completely at variance with it. Now, suppose, since his environment were not an illusion, everything else were? Suppose all these troublesome memories were no more than a dream? Why, he was just little Allan Hartley, safe in his room on a Sunday morning, badly scared by a nightmare! Too much science fiction, Allan; too many comic books!

That was a wonderfully comforting thought, and he hugged it to him contentedly. It lasted all the while he was buttoning up his shirt and pulling on his pants, but when he reached for his shoes, it evaporated. Ever since he had wakened, he realized, he had been occupied with thoughts utterly incomprehensible to any thirteen-year-old; even thinking in words that would have been so much Sanscrit to himself at thirteen. He shook his head regretfully. The just-a-dream hypothesis went by the deep six.

He picked up the second shoe and glared at it as though it were responsible for his predicament. He was going to have to be careful. An unexpected display of adult characteristics might give rise to some questions he would find hard to answer credibly. Fortunately, he was an only child; there would be no brothers or sisters to trip him up. Old Mrs. Stauber, the housekeeper, wouldn't be much of a problem; even in his normal childhood, he had bulked like an intellectual giant in comparison to her. But his father—

Now, there the going would be tough. He knew that shrewd attorney's mind, whetted keen on a generation of lying and reluctant witnesses. Sooner or later, he would forget for an instant and betray himself. Then he smiled, remembering the books he had discovered, in his late 'teens, on his father's shelves and recalling the character of the openminded agnostic lawyer. If he could only avoid the inevitable unmasking until he had a plausible explanatory theory.

Blake Hartley was leaving the bathroom as Alan Hartley opened his door and stepped into the hall. The lawyer was bare-armed and in slippers; at forty-eight, there was only a faint powdering of gray in his dark hair, and not a gray thread in his clipped mustache. The old Merry Widower, himself, Allan thought, grinning as he remembered the white-haired but still vigorous man from whom he'd parted at the outbreak of the War.

"'Morning, Dad," he greeted.

"'Morning, son. You're up early. Going to Sunday school?"

Now there was the advantage of a father who'd cut his first intellectual tooth on Tom Plaine and Bob Ingersoll;

attendance at divine services was on a strictly voluntary basis.

"Why, I don't think so; I want to do some reading, this morning."

"That's always a good thing to do," Blake Hartley approved. "After breakfast, suppose you take a walk down to the station and get me a *Times*." He dug in his trouser pocket and came out with a half dollar. "Get anything you want for yourself, while you're at it."

Allan thanked his father and pocketed the coin.

"Mrs. Stauber'll still be at Mass," he suggested. "Say I get the paper now; breakfast won't be ready till she gets here."

"Good idea." Blake Hartley nodded, pleased. "You'll have three-quarters of an hour, at least."

So far, he congratulated himself, everything had gone smoothly. Finishing his toilet, he went downstairs and onto the street, turning left at Brandon to Campbell, and left again in the direction of the station. Before he reached the underpass, a dozen half-forgotten memories had revived. Here was a house that would, in a few years, be gutted by fire. Here were four dwellings standing where he had last seen a five-story apartment building. A gasoline station and a weed-grown lot would shortly be replaced by a supermarket. The environs of the station itself were a complete puzzle to him, until he oriented himself.

He bought a New York *Times*, glancing first of all at the date line. Sunday, August 5, 1945; he'd estimated pretty closely. The battle of Okinawa had been won. The Potsdam Conference had just ended. There were still pictures of the B-25 crash against the Empire State Building, a week ago Saturday. And Japan was still being pounded by bombs from the air and shells from off-shore naval guns. Why, tomorrow, Hiroshima was due for the Big Job! It amused him to reflect that he was probably the only person in Williamsport who knew that.

On the way home, a boy, sitting on the top step of a front porch, hailed him. Allan replied cordially, trying to remember who it was. Of course; Larry Morton! He and Allan had been buddies. They probably had been swimming, or playing Commandos and Germans, the afternoon before. Larry had gone to Cornell the same year that Allan had gone to Penn State; they had both graduated in 1954. Larry had gotten into some Government bureau, and then he had married a Pittsburgh girl, and had become twelfth vice-president of her father's firm. He had been killed, in 1968, in a plane crash.

"You gonna Sunday school?" Larry asked, mercifully unaware of the fate Allan foresaw for him.

"Why, no. I have some things I want to do at home." He'd have to watch himself. Larry would spot a difference quicker than any adult. "Heck with it," he added.

"Golly, I wisht I c'ld say home from Sunday school whenever I waned to," Larry envied. "How about us goin' swimmin', at the Canoe Club, 'safter?"

Allan thought fast. "Gee, I wisht I c'ld," he replied, lowering his grammatical sights. "I gotta stay home, 'safter. We're expectin' comp'ny; coupla aunts of mine. Dad wants me to stay home when they come."

That went over all right. Anybody knew that there was no rational accounting for the vagaries of the adult mind, and no appeal from adult demands. The prospect of company at the Hartley home would keep Larry away, that afternoon. He showed his disappointment.

"Aw, jeepers creepers!" he blasphemed euphemistically.

"Mebbe t'morrow," Allan said. "If I c'n make it. I gotta go, now; ain't had breakfast yet." He scuffed his feet boyishly, exchanged so-longs with his friend, and continued homeward.

As he had hoped, the Sunday paper kept his father occupied at breakfast, to the exclusion of any dangerous table talk. Blake Hartley was still deep in the financial section when Allan left the table and went to the library. There should be two books there to which he wanted badly to refer. For a while, he was afraid that his father had not acquired them prior to 1945, but he finally found them, and carried them onto the front porch, along with a pencil and a ruled yellow scratch pad. In his experienced future—or his past-to-come—Allan Hartley had been accustomed to doing his thinking with a pencil. As reporter, as novelist plotting his work, as amateur chemist in his home laboratory, as scientific warfare research officer, his ideas had always been clarified by making notes. He pushed a chair to the table and built up the seat with cushions, wondering how soon he would become used to the proportional disparity between himself and the furniture. As he opened the books and took his pencil in his hand, there was one thing

missing. If he could only smoke a pipe, now!

His father came out and stretched in a wicker chair with the *Times* book-review section. The morning hours passed. Allan Hartley leafed through one book and then the other. His pencil moved rapidly at times; at others, he doodled absently. There was no question, any more, in his mind, as to what or who he was. He was Allan Hartley, a man of forty-three, marooned in his own thirteen-year-old body, thirty years back in his own past. That was, of course, against all common sense, but he was easily able to ignore that objection. It had been made before: against the astronomy of Copernicus, and the geography of Columbus, and the biology of Darwin, and the industrial technology of Samuel Colt, and the military doctrines of Charles de Gaulle. Today's common sense had a habit of turning into tomorrow's utter nonsense. What he needed, right now, but bad, was a theory that would explain what had happened to him.

Understanding was beginning to dawn when Mrs. Stauber came out to announce midday dinner.

"I hope you won't mind haffin' it so early," she apologized. "Mein sister, Jennie, offer in Nippenose, she iss sick; I vant to go see her, dis afternoon, yet. I'll be back in blenty time to get supper, Mr. Hartley."

"Hey, Dad!" Allan spoke up. "Why can't we get our own supper, and have a picnic, like? That'd be fun, and Mrs. Stauber could stay as long as she wanted to."

His father looked at him. Such consideration for others was a most gratifying deviation from the juvenile norm; dawn of altruism, or something. He gave hearty assent.

"Why, of course, Mrs. Stauber. Allan and I can shift for ourselves, this evening; can't we, Allan? You needn't come back till tomorrow morning."

"*Ach*, t'ank you! T'ank you so mooch, Mr. Hartley."

At dinner, Allan got out from under the burden of conversation by questioning his father about the War and luring him into a lengthy dissertation on the difficulties of the forthcoming invasion of Japan. In view of what he remembered of the next twenty-four hours, Allan was secretly amused. His father was sure that the War would run on to mid-1946.

After dinner, they returned to the porch, Hartley *père* smoking a cigar and carrying out several law books. He only glanced at these occasionally; for the most part, he sat and blew smoke rings, and watched them float away. Some thrice-guilty felon was about to be triumphantly acquitted by a weeping jury; Allan could recognize a courtroom masterpiece in the process of incubation.

It was several hours later that the crunch of feet on the walk caused father and son to look up simultaneously. The approaching visitor was a tall man in a rumpled black suit; he had knobby wrists and big, awkward hands; black hair flecked with gray, and a harsh, bigoted face. Allan remembered him. Frank Gutchall. Lived on Campbell Street; a religious fanatic, and some sort of lay preacher. Maybe he needed legal advice; Allan could vaguely remember some incident—

"Ah, good afternoon, Mr. Gutchall. Lovely day, isn't it?" Blake Hartley said.

Gutchall cleared his throat. "Mr. Hartley, I wonder if you could lend me a gun and some bullets," he began, embarrassedly. "My little dog's been hurt, and it's suffering something terrible. I want a gun, to put the poor thing out of its pain."

"Why, yes; of course. How would a 20-gauge shotgun do?" Blake Hartley asked. "You wouldn't want anything heavy."

Gutchall fidgeted. "Why, er, I was hoping you'd let me have a little gun." He held his hands about six inches apart. "A pistol, that I could put in my pocket. It wouldn't look right, to carry a hunting gun on the Lord's day; people wouldn't understand that it was for a work of mercy."

The lawyer nodded. In view of Gutchall's religious beliefs, the objection made sense.

"Well, I have a Colt .38-special," he said, "but you know, I belong to this Auxiliary Police outfit. If I were called out for dutv, this evening, I'd need it. How soon could you bring it back?"

Something clicked in Allan Hartley's mind. He remembered, now, what that incident had been. He knew, too, what he had to do.

"Dad, aren't there some cartridges left for the Luger?" he asked.

Blake Hartley snapped his fingers. "By George, yes! I have a German automatic I can let you have, but I wish you'd bring it back as soon as possible. I'll get it for you."

Before he could rise, Allan was on his feet.

"Sit still, Dad; I'll get it. I know where

the cartridges are." With that, he darted into the house and upstairs.

The Luger hung on the wall over his father's bed. Getting it down, he dismounted it, working with rapid precision. He used the blade of his pocketknife to unlock the endpiece of the breechblock, slipping out the firing pin and buttoning it into his shirt pocket. Then he reassembled the harmless pistol, and filled the clip with 9-millimeter cartridges from the bureau drawer.

There was an extension telephone beside the bed. Finding Gutchall's address in the directory, he lifted the telephone, and stretched his handkerchief over the mouthpiece. Then he dialed Police Headquarters.

"This is Blake Hartley," he lied, deepening his voice and copying his father's tone. "Frank Gutchall, who lives at . . . take this down"—he gave Gutchall's address—"has just borrowed a pistol from me, ostensibly to shoot a dog. He has no dog. He intends shooting his wife. Don't argue about how I know; there isn't time. Just take it for granted that I do. I disabled the pistol—took out the firing pin—but if he finds out what I did, he may get some other weapon. He's on his way home, but he's on foot. If you hurry, you may get a man there before he arrives, and grab him before he finds out the pistol won't shoot."

"O.K., Mr. Hartley. We'll take care of it. Thanks."

"And I wish you'd get my pistol back, as soon as you can. It's something I brought home from the other War, and I shouldn't like to lose it."

"We'll take care of that, too. Thank you, Mr. Hartley."

He hung up, and carried the Luger and the loaded clip down to the porch.

"Look, Mr. Gutchall; here's how it works," he said, showing it to the visitor. Then he slapped in the clip and yanked up on the toggle loading the chamber. "It's ready to shoot, now; this is the safety." He pushed it on. "When you're ready to shoot, just shove it forward and up, and then pull the trigger. You have to pull the trigger each time; it's loaded for eight shots. And be sure to put the safety back when you're through shooting."

"Did you load the chamber?" Blake Hartley demanded.

"Sure. It's on safe, now."

"Let me see." His father took the pistol, being careful to keep his finger out of the trigger guard, and looked at it. "Yes, that's all right." He repeated the instructions Allan had given, stressing the importance of putting the safety on after using. "Understand how it works, now?" he asked.

"Yes, I understand how it works. Thank you, Mr. Hartley. Thank you, too, young man."

Gutchall put the Luger in his hip pocket, made sure it wouldn't fall out, and took his departure.

"You shouldn't have loaded it," Hartley *père* reproved, when he was gone.

Allan sighed. This was it; the masquerade was over.

"I had to, to keep you from fooling with it," he said. "I didn't want you finding out that I'd taken out the firing pin."

"You what?"

"Gutchall didn't want that gun to shoot a dog. He has no dog. He meant to shoot his wife with it. He's a religious maniac; sees visions, hears voices, receives revelations, talks with the Holy Ghost. The Holy Ghost probably put him up to this caper. I'll submit that any man who holds long conversations with the Deity isn't to be trusted with a gun, and neither is any man who lies about why he wants one. And while I was at it, I called the police, on the upstairs phone. I had to use your name; I deepened my voice and talked through a handkerchief."

"You—" Blake Hartley jumped as though bee-stung. "Why did you have to do that?"

"You know why. I couldn't have told them, 'This is little Allan Hartley, just thirteen years old; please, Mr. Policeman, go and arrest Frank Gutchall before he goes root-toot-toot at his wife with my papa's Luger.' That would have gone over big, now, wouldn't it?"

"And suppose he really wants to shoot a dog; what sort of a mess will I be in?"

"No mess at all. If I'm wrong—which I'm not—I'll take the thump for it, myself. It'll pass for a dumb kid trick, and nothing'll be done. But if I'm right, you'll have to front for me. They'll keep your name out of it, but they'd give me a lot of cheap boy-hero publicity, which I don't want." He picked up his pencil again. "We should have the complete returns in about twenty minutes."

That was a ten-minute under-estimate, and it was another quarter-hour before the detective-sergeant who returned the Luger had finished congratulating Blake Hartley and giving him the thanks of the

Department. After he had gone, the lawyer picked up the Luger, withdrew the clip, and ejected the round in the chamber.

"Well," he told his son, "you were right. You saved that woman's life." He looked at the automatic, and then handed it across the table. "Now, let's see you put that firing pin back."

Allan Hartley dismantled the weapon, inserted the missing part, and put it together again, then snapped it experimentally and returned it to his father. Blake Hartley looked at it again, and laid it on the table.

"Now, son, suppose we have a little talk," he said softly.

"But I explained everything," Allen objected innocently.

"You did not," his father retorted. "Yesterday you'd never have thought of a trick like this; why, you wouldn't even have known how to take this pistol apart. And at dinner I caught you using language and expressing ideas that were entirely outside anything you'd ever known before. Now, I want to know—and I mean this literally."

Allan chuckled. "I hope you're not toying with the rather medieval notion of obsession," he said.

Blake Hartley started. Something very like that must have been flitting through his mind. He opened his mouth to say something, then closed it abruptly.

"The trouble is, I'm not sure you aren't right," his son continued. "You say you find me—changed. When did you first notice a difference?"

"Last night, you were still my little boy. This morning—" Blake Hartley was taking more to himself than to Allan. "I don't know. You were unusually silent at breakfast. And come to think of it, there was something . . . something strange . . . about you when I saw you in the hall, upstairs. . . . Allan!" he burst out, vehemently. "What has happened to you?"

Allan Hartley felt a twinge of pain. What his father was going through was almost what he, himself, had endured, in the first few minutes after waking.

"I wish I could be sure, myself, Dad," he said. "You see, when I woke, this morning, I hadn't the least recollection of anything I'd done yesterday. August 4, 1945, that is" he specified. "I was positively convinced that I was a man of forty-three, and my last memory was of lying on a stretcher, injured by a bomb xplosion. And I was equally convinced that this had happened in 1975."

"Huh?" His father straightened. "Did you say nineteen *seventy-five*?" He thought for a moment. "That's right; in 1975, you will be forty-three. A bomb, you say?"

Allan nodded. "During the siege of Buffalo, in the Third World War," he said, "I was a captain in G5—Scientific Warfare, General Staff. There'd been a transpolar air invasion of Canada, and I'd been sent to the front to check on service failures of a new lubricating oil for combat equipment. A week after I got there, Ottawa fell, and the retreat started. We made a stand at Buffalo, and that was where I copped it. I remember being picked up, and getting a narcotic injection. The next thing I knew, I was in bed, upstairs, and it was 1945 again, and I was back in my own little thirteen-year-old body."

"Oh, Allan, you just had a nightmare to end nightmares!" his father assured him, laughing a trifle too heartily. "That's all!"

"That was one of the first things I thought of. I had to reject it; it just wouldn't fit the facts. Look; a normal dream is part of the dreamer's own physical brain, isn't it? Well, here is a part about two thousand per cent greater than the whole from which it was taken. Which is absurd."

"You mean all this Battle of Buffalo stuff? That's easy. All the radio commentators have been harping on the horrors of World War III., and you couldn't have avoided hearing some of it. You just have an undigested chunk of H. V. Kaltenborn raising hell in your subconscious."

"It wasn't just World War III.; it was everything. My four years at high school, and my four years at Penn State, and my seven years as a reporter on the Philadelphia *Record*. And my novels: *'Children of the Mist,' 'Rose of Death,' 'Conqueror's Road.'* They were no kid stuff. Why, yesterday I'd never even have thought of some of the ideas I used in my detective stories, that I published under a *nom-de-plume*. And my hobby, chemistry; I was pretty good at that. Patented a couple of processes that made me as much money as my writing. You think a thirteen-year-old just dreamed all that up? Or, here; you speak French, don't you?" He switched languages and spoke at some length in good conversational slang-spiced Parisian. "Too bad you don't speak Spanish, too," he added, reverting to English. "Except for a Mexican accent you could cut with a machete,

I'm even better there than in French. And I know some German, and a little Russian."

Blake Hartley was staring at his son, stunned. It was some time before he could make himself speak.

"I could barely keep up with you, in French," he admitted. "I can swear that in the last thirteen years of your life, you had absolutely no chance to learn it. All right; you lived till 1975, you say. Then, all of a sudden, you found yourself back here, thirteen years old, in 1945. I suppose you remember everything in between?" he asked. "Did you ever read James Branch Cabell? Remember Florian de Puysange, in 'The High Place'?"

"Yes. You find the same idea in 'Jurgen' too," Allan said. "You know, I'm beginning to wonder if Cabell mightn't have known something he didn't want to write."

"But it's impossible!" Blake Hartley hit the table with his hand, so hard that the heavy pistol bounced. The loose round he had ejected from the chamber toppled over and started to roll, falling off the edge. He stooped and picked it up. "How can you go back, against time? And the time you claim you came from doesn't exist, now; it hasn't happened yet." He reached for the pistol magazine, to insert the cartridge, and as he did, he saw the books in front of his son. "Dunne's 'Experiment with Time,'" he commented. "And J. N. M. Tyrrell's "Science and Psychical Phenomena.' Are you trying to work out a theory?"

"Yes." It encouraged Allan to see that his father had unconsciously adopted an adult-to-adult manner. "I think I'm getting somewhere, too. You've read these books? Well, look, Dad; what's your attitude on precognition? The ability of the human mind to exhibit real knowledge, apart from logical inference, of future events? You think Dunne is telling the truth about his experiences? Or that the cases in Tyrrell's book are properly verified, and can't be explained away on the basis of chance?"

Blake Hartley frowned. "I don't know," he confessed. "The evidence is the sort that any court in the world would accept, if it concerned ordinary, normal events. Especially the cases investigated by the Society for Psysical Research; they *have* been verified. But how can anybody know of something that hasn't happened yet? If it hasn't happened yet, it doesn't exist, and you can't have real knowledge of something that has no real existence."

"Tyrrell discusses that dilemma, and doesn't dispose of it. I think I can. If somebody has real knowledge of the future, then the future must be available to the present mind And if any moment other than the bare present exists, then all time must be totally present; every moment must be perpetually coexistent with every other moment," Allan said.

"Yes. I think I see what you mean. That was Dunne's idea, wasn't it?"

"No. Dunne postulated an infinite series of time dimensions, the entire extent of each being the bare present moment of the next. What I'm postulating is the perpetual coexistence of every moment of time in this dimension, just as every graduation on a yardstick exists equally with every other graduation, but each at a different point in space."

"Well, as far as duration and sequence go, that's all right," the father agreed. "But how about the 'Passage of Time'?"

"Well, time *does* appear to pass. So does the landscape you see from a moving car window. I'll suggest that both are illusions of the same kind. We imagine time to be dynamic, because we've never viewed it from a fixed point, but if it is totally present, then it must be static, and in that case, we're moving through time."

"That seems all right. But what's your car window?"

"If all time is totally present, then you must exist simultaneously at every moment along your individual life span," Allan said. "Your physical body, and your mind, and all the thoughts contained in your mind, each at its appropropriate moment in sequence. But what is it that exists only at the bare moment we think of as *now*?"

Blake Hartley grinned. Already, he was accepting his small son as an intellectual equal.

"Please, teacher; what?"

"Your consciousness. And don't say, 'What's that?' Teacher doesn't know. But we're only conscious of one moment; the illusory *now*. This is 'now,' and it was 'now' when you asked that question, and it'll be 'now' when I stop talking, but each is a different moment. We imagine that all those nows are rushing past us. Really, they're standing still, and our consciousness is whizzing past them."

His father thought that over for some time. Then he sat up. "Hey!" he cried, suddenly. "If some part of our ego is

time-free and passes from moment to moment, it must be extraphysical, because the physical body exists at every moment through which the consciousness passes. And if it's extraphysical, there's no reason whatever for assuming that it passes out of existence when it reaches the moment of the death of the body. Why, there's logical evidence for survival, independent of any alleged spirit communication! You can toss out Patience Worth, and Mrs. Osborne Leonard's Feda, and Sir Oliver Lodge's son, and Wilfred Brandon, and all the other spirit-communicators, and you still have evidence."

"I hadn't thought of that," Allan confessed. "I think you're right. Well, let's put that at the bottom of the agenda and get on with this time business. You 'lose consciousness' as in sleep; where does your consciousness go? I think it simply detaches from the moment at which you go to sleep, and moves backward or forward along the line of moment-sequence, to some prior or subsequent moment, attaching there."

"Well, why don't we know anything about that?" Blake Hartley asked. "It never seems to happen. We go to sleep tonight, and it's always tomorrow morning when we wake; never day-before-yesterday, or last month, or next year."

"It never . . . or almost never . . . *seems* to happen; you're right there. Know why? Because if the consciousness goes forward, it attaches at a moment when the physical brain contains memories of the previous, consciously unexperienced, moment. You wake, remembering the evening before, because that's the memory contained in your mind at that moment, and back of it are memories of all the events in the interim. See?"

"Yes. But how about backward movement, like this experience of yours?"

"This experience of mine may not be unique, but I never heard of another case like it. What usually happens is that the memories carried back by the consciousness are buried in the subconscious mind. You know how thick the wall between the subconscious and the conscious mind is. These dreams of Dunne's, and the cases in Tyrrell's book, are leakage. That's why precognitions are usually incomplete and distorted, and generally trivial. The wonder isn't that good cases are so few; it's surprising that there are any at all." Allan looked at the papers in front of him. "I haven't begun to theorize about how I managed to remember everything. It may have been the radiations from the bomb, or the effect of the narcotic, or both together, or something at this end, or a combination of all three. But the fact remains that my subconscious barrier didn't function, and everything got through. So, you see, I am obsessed—by my own future identity."

"And I'd been afraid that you'd been, well, taken over by some . . . some outsider." Blake Hartley grinned weakly. "I don't mind admitting, Allan, that what's happened has been a shock. But that other . . . I just couldn't have taken that."

"No. Not and stayed sane. But really, I am your son; the same entity I was yesterday. I've just had what you might call an educational short cut."

"I'll say you have!" His father laughed in real amusement. He discovered that his cigar had gone out, and re-lit it. "Here; if you can remember the next thirty years, suppose you tell me when the War's going to end. This one, I mean."

"The Japanese surrender will be announced at exactly 1901—7:01 p.m. present style—on August 14. A week from Tuesday. Better make sure we have plenty of grub in the house by then. Everything will be closed up tight till Thursday morning; even the restaurants. I remember, we had nothing to eat in the house but some scraps."

"Well! It is handy, having a prophet in the family! I'll see to it Mrs. Stauber gets plenty of groceries in. . . . Tuesday week? That's pretty sudden, isn't it?"

"The Japs are going to think so," Allan replied. He went on to describe what was going to happen.

His father swore softly. "You know, I've heard talk about atomic energy, but I thought it was just Buck Rogers stuff. Was that the sort of bomb that got you?"

"That was a firecracker to the bomb that got me. That thing exploded a good ten miles away."

Blake Hartley whistled softly. "And that's going to happen in thirty years! You know, son, if I were you, I wouldn't like to have to know about a thing like that." He looked at Allan for a moment. "Please, if you know, don't ever tell me when I'm going to die."

Allan smiled. "I can't. I had a letter from you just before I left for the front. You were seventy-eight, then, and you were still hunting, and fishing, and flying your own plane. But I'm not going to get killed in any Battle of Buffalo, this

time, and if I can prevent it, and I think I can, there won't be any World War III."

"But— You say all time exists, perpetually coexistent and totally present," his father said. "Then it's right there in front of you, and you're getting closer to it, every watch tick."

Allan Hartley shook his head. "You know what I remembered, when Frank Gutchall came to borrow a gun?" he asked. "Well, the other time, I hadn't been home. I'd been swimming at the Canoe Club, with Larry Morton. When I got home, about half an hour from now, I found the house full of cops. Gutchall talked the .38 officers' model out of you, and went home; he'd shot his wife four times through the body, finished her off with another one back of the ear, and then used his sixth shot to blast his brains out. The cops traced the gun; they took a very poor view of your lending it to him. You never got it back."

"Trust that gang to keep a good gun," the lawyer said.

"I didn't want us to lose it, this time, and I didn't want to see you lose face around City Hall. Gutchalls, of course, are expendable," Allan said. "But my main reason for fixing Frank Gutchall up with a padded cell was that I wanted to know whether or not the future could be altered. I have it on experimental authority that it can be. There must be additional dimensions of time; lines of alternate probabilities. Something like William Seabrook's witch-doctor friend's Fan-Shaped Destiny. When I brought memories of the future back to the present, I added certain factors to the causal chain. That set up an entirely new line of probabilities. On no notice at all, I stopped a murder and a suicide. With thirty years to work, I can stop a world war. I'll have the means to do it, too."

"The means?"

"Unlimited wealth and influence. Here." Allen picked up a sheet and handed it to his father. "Used properly, we can make two or three million on that, alone. A list of all the Kentucky Derby, Preakness, and Belmont winners to 1970. That'll furnish us primary capital. Then, remember, I was something of a chemist. I took it up, originally, to get background material for one of my detective stories; it fascinated me, and I made it a hobby, and then a source of income. I'm thirty years ahead of any chemist in the world, now. You remember *I. G. Farbenindustrie*? Ten years from now, we'll make them look like pikers."

His father looked at the yellow sheet. "Assault, at eight to one," he said. "I can scrape up about five thousand for that— Yes; in ten years— Any other little operations you have in mind?" he asked.

"About 1950, we start building a political organization, here in Pennsylvania. In 1960, I think we can elect you President. The world situation will be crucial, by that time, and we had a good-natured nonentity in the White House then, who let things go till war became inevitable. I think President Hartley can be trusted to take a strong line of policy. In the meantime, you can read Machiavelli."

"That's my little boy talking!" Blake Hartley said softly. "All right, son; I'll do just what you tell me, and when you grow up, I'll be president. . . . Let's go get supper, now."

PSYCH'S WAR

By O. W. HOPKINSON, Jr.

A monomaniac is normally an undesirable type—but in certain types of work, he'd be highly useful. Provided everything went according to plan—

EXCEPT for the bobbing object the sea was smooth as batter. The plane had long since gone down, leaving a dark and dreary expanse under the moonless sky. The stars ,though, were brilliantly hard, and occasional ripples from the round object that looked like a man's head distorted and motivated their images like fireflies. It was a perfect night. It was too bad there was no one to enjoy it.

The head came closer to shore, the arms moving regularly and rhythmically with almost mechanical precision. Finally the thing came close enough to the beach to make use of the slight swell. Coasting in with a small comber the manlike figure picked itself from the sand and, without a backward glance stalked purposefully toward the dunes which backdropped the stagelike beach.

Feet slipping and sinking in the soft footing, the hyppo made its way to the road that rang along behind the string of dunes and turned left. With the instinct of a homing bird it sought a particular location, a landmark, a sign.

The cairn might have been a heap of stones and pebbles carelessly thrown together by children playing. It indicated the small car hidden inland from the road, covered with canvas, the edges staked down and sandcovered. With the smooth certainty of an automaton, the hyppo removed the cover, folded it and put it in the back. It opened the door and stepped in. Taking a key from the waterproof pouch at its waist it turned on the ignition, checking methodically the gas, oil and battery supplies. Starting the purring motor it threw the car into gear, backed out of the hiding place and started north along the beach road.

The little car rolled its unerring way into the coastal city, left at the circle, then west along the highway. From jersey into Pennsylvania by ferry. It had a long wait there although the traffic was light. It did not notice.

Across the ferry the car headed southwest into Pennsylvania. Over the Susquehanna toward a small Pennsylvania town.

On its way the hyppo had no thoughts. Reactions, instructions to follow, yes. It knew there was something about the hands, the retinal pattern. But by no motion did the calm, impassive face betray doubt, hesitation or impatience. These were beyond its scope.

Approximately five miles from its goal the car refused to run. The motor raced, then stalled. Without a moment of delay the hyppo got out and proceeded on foot. With robot-like unweariness it paced off the miles, stumbling occasionally over some unexpected impediment in the road but always continuing, changeless of expression, unalterable in purpose.

The hyppo entered the small town, heedless of the darkness, the absence of life, and turned at the first highway leading north. Two miles further it ducked suddenly into the brush after first glancing warily around to make sure there were no observers. With preternaturally keen senses it waited motionlessly in the concealment of a bush to make sure it was not followed. Then, swiftly, it beat into the woods, stopped before a small hill. This was the hyppodrome. Pushing aside the chestnut shoots, the hyppo stepped over the stump and into a tunnel. The tunnel led back on the same level, into the bowels of the hill. Turning at the first branch it stopped before a door, dimly illuminated by an orange glow. The hyppo knocked once, opened the door and entered.

Behind the desk across the room, the officer glanced up. The hyppo saluted, extended its hands and waited.

Waiting, it starved to death.

The captain was highly pleased. H.E., the new Bureau of Espionage, was to be honored with a visit from the biggest brass hat of them all. And a decent one, too, who knew what he was talking about. Everyone knew that Smarty Carter, Major Carter as he was called in more formal circles, had earned his nickname with the uncanny faculty he had for detecting any trace of the off-color in foreign relations; both above and below board.

About time, too, thought Captain Machail. About time, indeed. With the reports that had been going out of his station for the last eight months, he'd at least expected a delegation from the Cabinet, maybe the President himself. Well, Carter would have to do for the

time being. Anyway he'd give Machail a chance to let loose. Ever since the captain had been assigned to this division by reason of certain tests, he'd waited, bursting, for the chance to tell someone about the incredible things there were going on in this little subterranean retreat under an Appalachian foothill. He rustled papers restlessly. When a thing is clever beyond a man's wildest dreams and at the same time secret as the core of the moon, thought Machail, a fellow has a hard time containing himself. And then, if you add on what they did to old Carter last week, it was just too good to keep quiet.

A knock on the door snapped him to his feet, eagerly. A lean, tigerish man in a major's uniform strode in, accompanied by a lieutenant.

"Major Carter, Captain Machail," intoned the lieutenant, after an exchange of salutes. The men shook hands. Machail dismissed the lieutenant and motioned to a chair.

The major nodded and sat down. Taking out a cigar case he leaned over, offering one to the captain.

"At ease, Machail. As usual," he smiled.

"Thanks," returned the captain, biting the end of the cigar and holding a match for the major. One does not deign to sniff at cigars offered by superiors, even old friends. He inhaled with evident enjoyment and relaxed in the swivel chair.

"Well, sir?"

Carter leaned back and puffed smoke at the ceiling.

"The works," he said smiling. "The works. Spare nothing, dream nothing. Just the plain, unvarnished truth about these reports you fellows have been sending in." He blew a ring at the desk lamp and grinned. "I used to think I was pretty hot at one time. But the stuff we've been getting from H.E. is high explosive—literally. It's unbelievable. So how about the low-down?"

The captain was tickled.

"I've all the information you want," he said, "and the authority to hand it over. Much good may it do you."

"Seeing as how identification gave me a clean bill," added the major. They both chuckled. Captain Machail had worked under Carter more times that he could remember. But retinal patterns were required and retinal patterns they got. He stood up.

"If you'll follow me, sir—"

The major glanced inquisitively at his cigar. Machail nodded.

"It's O.K.," he said. "As a matter of fact, you'll be surprised at the lack of discipline. But don't let it bother you. I, for one, can maintain that our orders are obeyed to the letter. The absolute letters."

Opening the door, the two officers proceeded out into the dark corridor, Machail leading the major toward a small elevator.

"I'm taking you first to the shot room. From there we'll follow through the series of testing labs and finally to indoctrination." He chuckled. "That's a nice, friendly word for what we're doing." He put his finger on the top button of the board and turned to Carter. "Of course, you haven't been told of your release procedure?"

The visitor shook his head.

Macnail laughed. "It's very unusual. And very effective. Do you remember Lieutenant Neil?" he added irrelevantly. "You met him at a party last week—just after you'd expressed your wish to visit H.E.?"

The major looked puzzled.

"No, of course not. We'll remedy that for the duration of your visit. Before leaving you'll have to forget the whole thing, including Neil's manipulations. But you'll be none the worse. We'll take care of that."

The elevator came to a stop and the door slid open. The two emerged into a hall which was the exact duplicate of the one they had just left.

"You see," Machail went on, "the less important details are carried on near the surface. As the indoctrinee descends from level to level he becomes better prepared and therefore the consequences of destruction grow steadily greater. The last and lowest level contains the rendezvous, the appointment rooms. Which are, of course, the culmination of the total process." Pausing in his talk he stepped to a door and pushed it open. "This is the reception center." They walked in.

"Martin!"

"Here, sir."

"Pembroke!"

"Here, sir."

"Bonati!"

"Here, sir."

Down the line of ten men, each one answering as his name was called. The sergeant behind the desk inspected them as they answered the roll. He put down the paper from which he'd read the names, took out a pack of cigarettes and lit one. Then he leaned back in his chair,

put his hands behind his head and his feet on the desk.

"O.K., boys," he directed. "Relax."

Feet parted, hands clasped behind buttocks.

The sergeant shook his head.

"Nah. I said relax. Like me. The first thing you've got to get through your heads is the fact that there's little discipline here. No tough guys, no bawling outs, no hard work. Pull up those chairs behind you and take it easy."

The men looked uncertainly around and then turned to the row of chairs standing against the wall. Feet shuffled and leather creaked as they settled their weight. Some of them lit cigarettes, one pulled out a pipe.

The sergeant nodded approvingly. "That's better," he told them. He glanced around and spied the visitors. He stood abruptly and walked over, uncertain, as he spotted the major, whether his remarks applied in this case. Machail waved a negligent hand. "Forget it," he directed. He spoke briefly and the sergeant nodded.

"Sure," he said and sat down at the desk. "Don't mind them," he ordered. "They just stopped in for a look around." Then he glanced at Machail who inclined his head and grasped the major by the arm. He indicated the door with a jerk.

Outside, Machail leaned over and whispered to Carter. "They can't be at ease with us in there," he told him. "Come on around to the observation room."

He led the way through another door, marked private, and went over to the wall. He turned off the light and moved a panel. A small slit of light appeared and Carter heard the sergeant's voice.

". . . and you'll get along better the easier you take it. You guys don't know what it's all about yet but I'm tellin' you the first thing you gotta get through your heads is relax, take it easy."

Through the crack Carter could see that the words were having an effect. The indoctrinees were taking the advice literally. They were sprawled in all sorts of positions. The pipe smoker had thrown one leg over the arm of the chair and was staring at the ceiling, pouring out clouds of fragrance. The sergeant continued.

"All you guys have been brought here because you passed a test. You don't remember the test. Nobody does—who passed it, that is. Never mind about the guys who don't pass it. That's none of your business. But from here on down you'll work with a guy you've met before. Some of you will even recognize a good friend. That's all right. He's still a good friend. But just the same, he's doin' his duty, same like the rest of us. So don't hold it against him. And don't be surprised at anything you see or hear."

The sergeant leisurely snuffed out his butt in an ashtray. "Well, that's about all, I guess. Any time you guys are ready to leave, we'll get along. NO, take your time, take your time. Just remember what I said. Relax and don't take everything you hear for an order."

Machail slid the panel closed and snapped on the overhead light. Carter had a quizzical expression on his face. He looked at the captain, who could hardly conceal his glee.

"Don't remember a thing, do you, major?" he asked. Carter shook his head slowly.

"Nope," he murmured, "not a thing."

The captain took his arm. "Let's go," he directed.

They stepped out into the corridor. The indoctrinees from the next room were lined up before the elevator waiting for it to arrive. Respectfully they parted to make way for the two officers. Machail shook his head.

"You first," he told them. They grinned and commented among themselves as they shuffled, by fives, into the car and were dropped to the next level.

Below, Machail led the way to another room. One which displayed a red light over the door. The usual orange was missing although there was a darkened bulb next to the red. Machail leaned against the door post and offered the major a cigarete.

"We'll have to wait," he whispered. "There's a trance going on."

Carter declined in favor of his own cigar.

"Trance?" he questioned. "I don't get it."

At that moment the door opened and a lieutenant slipped into the hallway. Carter started in surprise.

"Neil!" he ejaculated. Machail winked at the man. Neil extended his hand.

"Hello Carter, Hi Machail," he greeted. "I see you got here eventually," he smiled at the major.

Machail laughed softly.

"Yep," he said, "the major is here to get a brainful." He jerked his thumb at the closed door. "Any chance of seeing something?"

Lieutenant Neil nodded.

"Couple of minutes," he told them. "The guy wanted a cigarette before we started so I ducked out to get some."

Machail held out his own pack. "Help

yourself," he directed. Neil took a couple and nodded his thanks.

"Wait about ten minutes," he said. "I'll call you in when he's ready." He ducked back into the room.

Carter wiped his forehead bewilderedly. "It's . . . it's funny," he muttered. "I do remember now. That party—the six of us—Neil was there. He suggested a game. We tried it and . . . and—"

Machail was in transports of joy.

"Yeah," he chortled, "Neil just snapped you out of it. He would have done it in a short while, sometime during your visit here but just now was as good a time as any. Did you see him touch his right ear when he saw you?"

Carter nodded slowly.

"That," said Machail, "was the signal. He gave you that command at the party last week. When you told Headquarters that you wanted to see Hypnotic Espionage, you were such a big shot that they couldn't very well put you off. So Neil was put on your tail to determine your suggestibility, and, if possible, shoot the works to you. And a very nice job he did."

Carter scratched his ear with the cigar. "H.E.—Hypnotic Espionage. So that's what's going on. The secrecy, the preliminary test—"

"Because it works—beautifully," continued Machail. "And don't let me hear you start spouting rubbish because you're the perfect example yourself. You don't deny that?"

The major grinned ruefully. "So I'm the perfect subject. The susceptible man. Who'd have thought it?"

Machail clapped him on the shoulder.

"Don't feel so bad," he grinned. "It doesn't necessarily mean a thing. Suggestibility as a mental trait does not mean a weak personality or character. They are not tied together in any way, organically or psychologically. That fallacy arose through the reverse process. A man may be so susceptible that his character is founded upon the suggestions and influence of others. On the other hand, a personality which is strongly individual may be susceptible to commands given under particularly favorable circumstances. That's you."

Machail was gratified. It had come out at last, the lovely secret he'd been waiting for so long to pass on. The delicious morsel he'd had to keep to himself until just the right moment.

"And yours is the hardest type to find," he went on. "Generally we recruit from the ranks of the others, the milquetoasts who've been made that way by their susceptibility. Hypnotic subjects with strong characters are hard to find. Neil was quite pleased with himself."

"I'll beat his head in," muttered the major.

The aforementioned head was at that moment thrust out under the red light. Machail in burlesque made a grab for the major's arm. Neil ducked in mock surprise.

"Found out, has he?" he asked. Carter's face broke into a smile.

"Snake," he commented. "Viper."

Neil shrugged his shoulders good-naturedly.

"I'm used to it," he said. "But come on in. No loud noises, though. This is an initial. Later on I'll have him down so far he'll ride a roc and not even know it's going off."

The two men tiptoed in after the lieutenant.

In one corner of the room was an easy-chair with a softly glowing floor lamp beside it. In the chair half sat, half lay, a man in the uniform of a corporal. His head was thrown against the backrest, his breathing easy, though shallow. Neil felt his pulse and nodded.

"Cut down the pulse rate, just for a trier," he spoke over his shoulder. "This boy went under so fast I thought he'd be a pretty safe bet." He turned to the officers. "Incidentally this is my last for today. If you like, I'll go along with you."

Machail looked at the major inquiringly. Carter nodded.

"Sure," he agreed. "Glad to have you." Neil leaned over the figure in the chair. Carefully he pulled up one eyelid. He nodded to himself. Then, straightening and speaking in a quiet tone he gave his final instructions.

"You will be susceptible to and under my control at any time I command it by touching my left ear. You are falling into a natural sleep," he droned. "At the end of five minutes you will awaken, normal in every respect except that you will not remember this occasion. You will go about the evening according to your regular schedule.

The three men left the room quietly. As the door was pulled to behind him Carter heard the faint, tremulous sounds of a growing snore.

"This is the next stage," said Neil. "Here, for instance, is Lawrence."

The private shook hands with the major, completely at ease.

"Lawrence," directed Neil, "how about telling Major Carter what you've been doing since you came here."

"Certainly," the boy smiled eagerly as

he turned to the officer. "We're having a swell time. Movies whenever we want. Good eats, leisure to read. And nobody to yell at us or order us around. It sure is swell. The only trouble is I don't know what it's all about yet." He paused and shrugged. "Oh, well, I guess that'll come out in good time."

"How about your pet?" asked Neil, rubbing his chin.

"Oh sure, of course," went on the private, shamefacedly. "Sure, that's the best of all. We can keep pets if we want to. Like Tippie here," he gestured toward his feet. "Here, Tip, shake hands with the major.

Carter glanced down, then up, looking hard at Lawrence. He scowled. "What the—" he began. The captain nudged him. "Pretend," he hissed. Carter looked from Machail to Neil. Lawrence was bending over, going through the motions of patting a small dog.

"Come on, Tip, good dog. Atsa boy." Carter shrugged, leaned over and went through the make-believe.

"Intelligent, isn't he," crowed Lawrence. "Only took me about five minutes to teach him that one. Eh, fella?" He looked down affectionately. "Want to see him do another? I'll show you one that's a peach. Here Tip—"

"No, I don't think we have time," broke in Neil, touching his chin again. "We've got to be getting along." Lawrence smiled and started to walk away.

"Don't forget, Lawrence," called Neil, "no pets. Absolutely no dogs allowed in this place. We have to be strict on that score."

The private grinned over his shoulder and winked at the major. "He's always pulling that stuff," he said. "Pets? Who would want to keep a pet here? Besides, I don't like 'em."

Carter's eyebrows jerked up in astonishment. He started after the retreating man. "If he thinks he's pulling my leg—" he began.

Machail stopped him.

"Cut it," he directed. "Didn't you see Neil controlling him? That's one of the advanced subjects. Neil has him so he can throw him in and out of trance without his knowing it. When he goes in he always has a pet dog. When he comes out, no dog." Neil gave his affirmation.

"It's easy once you've got them going," he explained. He scratched his head. "Just the same, they get too realistic. Sometimes I wonder if it isn't me who's under when I see how some of them carry on."

Machail found himself busy expostulating to an almost deaf ear as he dragged Carter to the elevator. It took a lot of talking between the two of them to convince the major that he should take them seriously.

Suddenly Neil snapped his fingers. Carter shied away nervously. Machail saw the reaction and laughed.

"Don't worry, major," he said. "You're O.K. now. And all you'll get when you leave is a post-hypnotic forgettery."

Neil was pulling them out of the car.

"I've got just the thing," he informed them. "Major, you remember Sergeant Nicholas?"

"Certainly," was the reply. "He was on my post for three years until he was assigned elsewhere—" His voice trailed off. "Here?" he asked weakly. Machail nodded.

"Know anything about him?" continued Neil. "Background, training, that sort of thing?"

"Well, a little. Know his parents slightly. He came from my town. Of course I know some of the things you run across in the course of ordinary friendly conversation."

"Would you say he was a student?" asked Neil.

"Definitely not. Brains, yes, but not the scholarly type."

"Couldn't speak a foreign language?"

"Nope," said Carter. "Know him that well. Didn't get to college and his people were American. Born here, no outside influence."

Neil nodded. "In here a moment."

They passed into another little room, similar to the ones the major had seen on higher levels. A young man in a sergeant's uniform arose stiffly as they came in.

"Hello, Nicholas," Carter called out advancing with his hand extended. The sergeant looked at him disdainfully. He glanced at the others and spoke rapidly a gibberish which was all but unintelligible. Carter stopped as though he'd been struck. He turned from one to the other querulously.

"Now what?" he asked.

"Five months of intensive study augmented by hypnotic influence. Trance instruction and post-hypnotic concentration. Hypnotic memory. Right now he's under. Hence his nonrecognition and inability to speak English. When he's finished here he will talk, think and feel in that language. It will be his native tongue as far as he knows."

"Incredible," breathed Carter.

"Elementary," smiled Neil.

"Lieber Gott!" snarled Nicholas with feeling, turning his back on the trio.

Back in the office, Machail leaned comfortably in his chair. Neil smoked a cigarette, sitting on a corner of the desk. Carter looked uncomfortably from one to the other.

"And it actually works. Of course—it must. Those reports—" He shook his head.

"Certainly it works." Neil was amused. "You've seen the others. The man who held a cigarette under his armpit till it was extinguished. Then screamed in anguish when a pencil was held to his breast. Now can you torture the truth from a man like that? We incorporate those two reactions. When one of our agents leaves here he actually feels no pain, he can't be coerced physically but he gives an absolutely realistic performance when subjected to violent questioning."

"He has complete purpose, the most complete purpose in the world. It is impossible for him to have an aim other than the one we have given him. He may dissimulate in any way whatsoever to achieve this aim. His senses have been made hypersensitive to further him. He has a personality that has been tailored to the occasion and a language that is more natural than his own."

"And, best of all, there is no chance of his losing his information once he has obtained it. For the only man who can receive his report is the one who has handled him directly and who is *en rapport,* hypnotically speaking, with the agent, and his only control. That cannot be faked."

Neil snuffed out the butt of his cigarette and clasped his hands around his knee.

"When he has finished," he continued, "he finds his way to the rendezvous with unerring accuracy at the appointed time. He has been commanded to return here, show his prints and retinal pattern for the safe of safety, and then report to his control. There he completes his mission."

"But," broke in Carter, "what's to prevent him from giving his information to the wrong man?"

"Neil has told you," said Machail, "that only the man who has hypnotized him is able to bring him out of it. Only this man is able to control the agent. When he finds him he gives his report and then is restored to normalcy."

Carter bit savagely at the end of his fourth cigar. "I don't like it," he protested. "What about that boy on the third level? The one with the dog. Suppose something goes wrong. The receiving officer, the control—the whole place."

Neil's smile faded. "That, sir, is one of the chances we have to face. The men are fully informed before their final instructions are issued. They make the choice voluntarily. If they decide not to take it they are hypnotized, their minds cleansed, false memory of unimportant work substituted for their stay here and they are transferred."

"Yes, yes," barked the major, "I can see that. But suppose, just suppose that something went wrong. Suppose one of the agents came back and there was no receiving officer for him—something like that. What would happen?"

Neil dropped his eyes to the floor. Machail shifted nervously in the chair.

"Well?" snapped Carter.

"He'd be better off dead," said Machail, "because he certainly would not be a man."

Approximately five miles from its goal the car refused to run. The motor raced and then stalled as the wheels caught in a great slit across the highway. The hyppo got out and proceeded on foot, dodging the fallen rubble, the wreckage that surrounded him. With robotlike unweariness he paced off the miles, climbing, stumbling, crawling, but always continuing, changeless of expression, unalterable in purpose.

The hyppo crept through the massed tumble of the small town, detected the faint remains of a highway leading north. Two miles farther he ducked as though he were creeping under foliage although the almost flat plain disclosed no growth. He looked warily around to make certain that he was not observed.

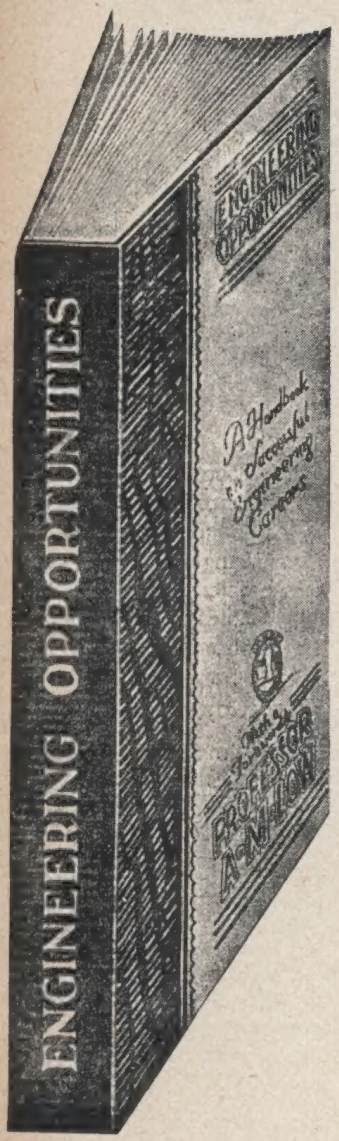
With preternaturally keen sense he waited motionlessly, crouched as though in concealment, spreading imaginary branches to make sure he was not followed. Then, swiftly, he crunched across the featureless plain, stopped suddenly. Pushing aside more imaginary growth he stepped high, then proceeded on his way. Turning a few yards further he walked at right angles to his former path for a distance of thirty or forty feet. He raised his hand as though knocking at a door then turned an imaginary knob.

He stepped forward three paces, lifted his hand in salute.

Then he extended his hands and waited.

Waiting, he starved to death.

AMBITIOUS ENGINEERS



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